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ABSTRACT

This volume is one of three in a self-paced computer literacy course that gives allied health students a firm base of knowledge concerning computer usage in the hospital environment. It also develops skill in several applications software packages. This volume contains five self-paced modules that allow students to interact with a health information system simulation. The modules are for these disciplines: nursing, nuclear medicine, radiographic technology, radiation therapy, and respiratory care technology. Each module contains three parts. A student course syllabus provides this information: catalog description, prerequisites, required text, and instructional process. The student guide presents this information for each of the five units in each module: unit objectives and either discussion and assignment or instructions for using the simulation on a computer. The instructor's course syllabus consists of a module description, prerequisites, required equipment and materials, module contents, procedure, and answer keys. (YLB)

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Curriculum Improvement Project
Region II

HEALTH INFORMATION SYSTEM SIMULATION

Developed by Beth H. Anderson and Kevin Lacobie

U.S. DEPARTMENT OF EDUCATION
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Prepared by:

Galveston College

With Support From:
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Project Director: Cheryl L. Willis, Ph.D.

June 30, 1987

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FOREWORD

Galveston College is not unlike other small community colleges trying to keep its curriculum in sight of rapidly changing technologies. We are unique, however, in that we were given an opportunity by the Coordinating Board of the State of Texas through a grant of Carl D. Perkins Act vocational funds to undertake a major curriculum improvement project which had as its focus curricula for accounting, the allied health professions, microcomputer applications, and office occupations. The course curriculum that you have before you is one of nine courses or modules that were developed from this project. What cannot be immediately evident to you, though, is the sense of cooperation that governed the various phases of the project. The resulting benefits to the College, its faculty, and its staff as a result of this project, were many, including increased knowledge of the curriculum improvement process, increased knowledge of the ramifications of networking microcomputers, increased awareness of the vocational programs of other community colleges, and increased awareness of the need for staff development opportunities. The enduring impact of this project will come in the months ahead as our instructors, and hopefully other instructors across Region II and the state, implement the curricula. We at Galveston College are proud of the results of the Curriculum Improvement Project and hope that your college will share the benefits.

Marc A. Nigliazzo

Dr. Marc A. Nigliazzo
Vice President and Dean of Instruction
June 30, 1987

REGION II

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Copies of the above course curriculum are available for a nominal cost from: Division of Business and Technology
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A C K N O W L E D G M E N T S

This course curriculum represents but one of the many final products of the Curriculum Improvement Project. I want to take this opportunity to thank those individuals who worked so hard together to bring this project to a successful conclusion. To the administration and the Board of Regents of Galveston College I wish to express my appreciation for their willingness to accept the challenges and risks associated with a project of this magnitude and for having the forethought to see its benefits for the college and the community. To the support staff in the Business Office and the Office of Planning and Development, thank you for your patience and helpfulness in providing the project staff with everything we needed--yesterday. To Karla Back, Assistant Dean of the Division of Business and Technology, for her constant encouragement of the vision of the project, I will be forever grateful. My most heartfelt thanks, though, go to the project team--all of the curriculum writers who gave 110 percent effort whenever it was needed; the various editors and word processors who helped us along the way; Paul Fama, Research Associate, who provided constancy and consistency; and Mary James, project secretary, who kept us all sane.

Galveston, Texas
June 30, 1987

Cheryl L. Willis, Ph.D.
Project Director

P R E F A C E

As more and more hospitals begin to network their computer resources, it will become imperative for health care professionals to know how to interact with a patient database. The School of Allied Health Sciences at the University of Texas Medical Branch--Galveston recognized this need for its students and commited resources to develop a health information system simulation (HISS). Because of long-standing cooperative arrangements between Galveston College and UTMB, self-paced modules were developed for Galveston College students in the health programs of nursing, respiratory care technology, radiation therapy, radiation technology, and nuclear medicine therapy which would allow our students to interact with HISS. Each module for these disciplines contains three parts--student's syllabus, student's laboratory guides for each unit, and instructor's manual. The materials presented in these modules are only a suggested format for content of this nature and, as typical with community college curriculum, will undergo revision in the future. The authors and Galveston College welcome your comments regarding your experience with these materials.

NURSING MODULE

STUDENT COURSE SYLLABUS

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Nursing Student's Syllabus

Module Title: Health Information System Simulation for Nursing

Module Description:

A series of self-paced instructional units which introduce the health care student to the functions of a computerized patient database through the use of a simulated health information system.

Prerequisites:

Introductory microcomputer applications course or equivalent.

Text:

None

Instructional Process:

This module could be included in an established course in the curriculum of allied health science students. It will be used primarily in the laboratory setting.

Objectives:

Upon completion of this module, the student will be able to:

1. use a simulated hospital information system in a laboratory environment.
2. acquire an understanding of the usefulness of an information system in a clinical setting.
3. contrast the data used in a manual hospital information system with that used in a computerized information system.

Evaluation:

Laboratory assignments: Assignments are a part of each unit in this module [Deadlines and percentage of total course grade should be established by course instructor].

Special Instructions:

The laboratory sessions will be conducted in the Learning Resource Center in the School of Allied Health Sciences building on the UTMB campus. [Instructor will need to determine actual dates and times at the time the course is presented.]

The student will request a network software disk at the counter in the Learning Resource Center (LRC) and ask to be directed to the networked IBM-PCs.

Overview of Module:

Students completing this module (Units I-V) will participate in activities that are simulations of those they would expect to encounter in a real hospital information system. These activities include reviewing orders, reporting activities done as a results of an order, and generating a graphic report and a management report.

Remember

This is a simulation of a hospital information system and therefore is not as complete as a real-life information system. However, it does simulate a truly integrated data-base system so that there is no redundancy in collecting, storing or reporting data.

STUDENT GUIDE

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Nursing Student's Guide

Unit I

Unit Title: Introduction

Unit Objectives:

Upon completion of this unit, the student will be able to:

1. relate the issues of patients' privacy and confidentiality of health information to a hospital information system.

2. discuss data integrity as it relates to a hospital information system.

Discussion:

Local Area Networks (LANs) link micro-computers within a limited geographic area such as a hospital or a university campus. LANs were developed to allow the growing numbers of micro-computers found in organizations to communicate with each other through electronic mail and text transmission, share hardware resources such as printers, and to share information. The computers are connected to each other through coaxial cables in a single line, a star or ring formation, or some modification of this such as the StarLAN network used in this simulation.

The Hospital Information System Simulation (HISS) developed by the School of Allied Health Sciences at The University of Texas Medical Branch at Galveston uses a completely computerized medical record. All orders for patients are received electronically and results are reported electronically. Other health care personnel also provide/receive information throughout the network. This type of information system can use the computer's capabilities to schedule patient treatments and procedures, including routine nursing care. This integration of data also allows management reports to be easily produced. These reports show the activity of a given department/unit for any defined period of time.

This information system is centered around the patient's record because the patient is what health care revolves around. The HISS uses a relational database. This means that records you review or create for a patient are "related" through a patient number to other records about that patient. This allows information to be easily requested from the system. When a common database is used in this way, it means that the information obtained is always up-to-date.

It is important to discuss the reliability or integrity of data. Computers are only tools for handling data. The information that is produced by a system such as this is only as valid as the data entered into the system. The same care must be used in reporting results of observations, therapy or treatments whether a computerized or manual system is used. Information is being reported that affects the future care and treatment of a patient and attention to accuracy is essential.

Whenever data about a patient is being reviewed or reported, the health care provider must consider the privacy of the patient and keep the information confidential. When using manual systems this includes care in handling paper documents. Reports should not be left in places where they can be seen by unauthorized individuals. In a computerized system, caution should be taken in leaving information on the screen where it can be viewed by other individuals. It is also important to guard information about how to enter the system and locate patient information from persons not authorized to view this information.

As a provider of health care, you will often have access to personal, confidential information about patients. It is important that you recognize your role in protecting each patient's privacy.

Assignment:

The assignment for this unit is a short paper to be done after completion of the entire module (Units I-V). This assignment will be due [instructor should insert date]. The body of the paper will be no less than three (3) and no more than five (5) pages in length, typed, double-spaced. A title page and any references cited will also be included. The paper should compare the use of the simulated hospital information system with other types of patient record keeping that you have seen or used. Be sure and give any advantages or disadvantages of the HISS. Include in your discussion comments about confidentiality and integrity of patient data that seemed important to you while completing the assignments for this module. Discuss the usefulness of computer reports, such as those you will be generating, to a department manager.

The paper will be evaluated as follows:

1.	Neatness, format	10 points
2.	Grammar, spelling	10 points
3.	Content	30 points
	TOTAL	50 points

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Nursing Student's Guide

Unit II

Unit Title: Reviewing Patient's Orders

Unit Objectives:

Upon completion of this module, the student will be able to:

1. locate a patient in the HISS.
2. review orders on a patient in the HISS.

Entry Screens:

1. All screens to enter or review patient data are done using the Informix Perform Screen Manager. A blank patient form (screen) looks like this:

```
Query Next Previous Add Update Remove Table Screen Current Master Detail
    Output Exit                                  ** 1: patient_data table**

                                PATIENT INFORMATION

Patient Number      [0          ]
Name:       First          MI  Last
            [           ][ ].[                    ]
Address:
            [                          ]
            [                      ],[  ][      ]

SS Number           [           ]
Race                [ ]   Sex [ ]  Birthdate [          ]

ADMISSION INFORMATION:

Admission Number    0
Adm Date
Adm Diag
Adm Type                          Source
Attending physician 0
```

2. Common to all screens is the top line, which contains all acceptable commands. This line will look like this:

```
Query Next Previous Add Update Remove Table Screen Current Master Detail
    Output Exit                                  ** 1: patient_data table*
```

3. To start one of these commands, type the first letter of the word. For example, to start a Query of the patient file, type Q.

4. A summary of these screen commands is as follows:

Q(uery)	To query the current patient file to find certain records
N(ext)	To display the Next record (patient file
P(revious)	To display the Previous record (patient) file)
A(dd)	To Add a new record (patient file)
U(pdate)	To Update (change) the current record on th screen
R(emove)	To Remove the current record on the screen
T(ables)	To switch Tables (files)
S(creens)	To switch Screens
C(urrent)	To redisplay the Current record
M(aster)	To switch to the Master table (file)
D(etail)	To switch to the Detail table (file)
O(utput)	To Output the records to a temporary file
E(xit)	To Exit the Screen Manager

Not all of these commands will be used in all screens. The most important commands to remember are Q(uery), A(dd), U(pdate), and E(xit).

5. When the cursor (a blinking underline) is in the top right-hand corner, a command can be selected. Otherwise, it will be on one of the fields of the screen. When it is in a field, the user can do one of the following:

   a. type to put information in the field,
   b. depress Ctrl-C to Quit the command, OR
   c. depress ESC to finish the command.

6. Items a. through c. are displayed at the top of the screen after you have chosen one of the commands. For example, if you have chosen the command A for Add, then you can input information into each field. Depressing the ESC (Escape) key will finish adding the information, and what you have typed will be permanently added to the file.

7. Other standard information on each screen is bracket characters, [], used to delimit each field of the record. The last line of the screen should be watched for informational messages.

Entry Keys:

When in the entry screen, these keys will be useful:

ENTER	-	To go to the next field
Down Arrow	-	Same as enter
Up Arrow	-	To go to the previous field
Left Arrow	-	Moves one character left, without erasing
Right Arrow	-	Moves one character right
Backspace	-	Moves left, deleting the character
DEL	-	Deletes the character at the cursor

Instructions:

1. To start, turn on a microcomputer with the network software disk available from the LRC counter.

2. The SAHS (School of Allied Health Sciences) network prompt (N:\>) will appear.

3. Type HISS.

4. You will be brought to the HISS area of the disk. At this time you can type HELP for assistance, if needed.

5. At the prompt (M:\>) type SCREEN INFO.

6. A blank patient form will appear which looks like this:

```
Query Next Previous Add Update Remove Table Screen Current Master Detail
    Output Exit                                  ** 1: patient_data table**

                                PATIENT INFORMATION

Patient Number      [0          ]
Name:       First          MI  Last
            [           ][ ].[                    ]
Address:
            [                          ]
            [                     ],[  ][      ]

SS Number           [           ]
Race                [ ]   Sex [ ]  Birthdate [          ]

ADMISSION INFORMATION:

Admission Number    0
Adm Date
Adm Diag
Adm Type                              Source
Attending physician 0
```

7. Type Q (for Query). This system allows you to query the patient's file with only partial information about the patient. For example, if you only know the patient's name, you enter that information in the appropriate space and touch ESC. Other information on that patient will appear if that patient is in the system.

8. If the information shown is not for the right patient, you can enter N (for Next) to view the next patient's record or P (for Previous) to view the previous patient's record. If it is the right patient, type D (for Detail). The high light characters, [], will appear around the admission information. If it is not the right admission, you can again use N or P to choose the right admission. <u>When you have located the correct patient and admission, be sure to note the admission number.</u>

9. When you have found the patient's record you need, type D to view the orders on this patient.

10. The most recent orders with results, if appropriate and available, will appear.

11. To see other orders you type N (to display the next order). You may keep typing N if you want to view other orders. You may type P (to display the previous orders) if you want to move backwards through the orders.

12. Complete your assignment for this unit. Remember to keep a record of the order number for use in Unit III.

13. When you have finished reviewing the orders, type E to exit and return to the prompt (M:\>).

14. You may continue with Unit III. (Skip numbers 15 and 16.)

15. IF YOU WANT TO END YOUR SESSION AT THE COMPUTER:

    Type QUIT to leave the HISS. You will see the network prompt (N:/>).

16. Remove the network software disk and return it to the LRC information desk.

Assignment:

Your instructor will give you the name of a patient in the HISS. You will locate this patient in the system by following the instructions given above. The information should be written on notebook paper and given to your instructor by [instructor should insert date]. For the first nursing order, list:

1. Patient's name
2. Patient's number
3. Admission number
4. Copy of first nursing order.

This assignment will be evaluated on the correctness of the data submitted to the instructor and is worth 10 points.

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Nursing Student's Guide

Unit III

Unit Title: Observation Reporting

Unit Objectives:

Upon completion of this unit, the student will be able to:

1. receive orders on a patient in the HISS.
2. report on activities done as a result of an order in the HISS.

Review:

Remember that the top line of each screen lists acceptable commands. You merely type the first letter of the command you want to start.

The last line of the screen should be watched for informational messages.

You may refer to Unit II again for help in using the system.

Instructions:

IF YOU ARE CONTINUING FROM UNIT II, SKIP TO # 5.

1. To start, turn on a microcomputer with the network software disk.
2. The SAHS network prompt (N:\>) will appear.
3. Type HISS.
4. You will be brought to the HISS area of the network. At this time you can type HELP for assistance, if needed.
5. At the prompt (M:\>) type CHANGE NURSING. (This will take you to the nursing area of the HISS.)
6. The following information will appear:

   NURSING AREA

7. Type SCREEN OBSERVATIONS.

8. A form will appear which looks like this:

```
Query Next Previous Add Update Remove Table Screen Current Master Detail
    Output Exit                                  ** 1: patient_data table**

                                OBSERVATIONS

Order Number          [0          ]

Observation Date [                      ]   Time [      ]

          Patient's Vital Signs

          Temperature       [     ]
          Pulse             [     ]
          Respiratory Rate  [     ]
          Blood Pressure    [    ]/[    ]

Comments:
    [
    [
```

9. Enter A (for Add).

10. Enter the order number you obtained from Unit II.

11. The patient and order information will appear and you should verify that you have the correct patient and the correct order.

12. Enter the date and time and observations. (These will be supplied by your instructor.)

13. Enter any comments.

14. Hit ESC (escape) to finish adding this record.

15. Type O (for output).

16. "Enter output file:" will appear on the screen.

17. Enter PRN (for print) and press Return three (3) times.

18. A report will print which is your assignment.

19. When you are finished, type E (to exit) and return to the network prompt (M:\>).

20. You may continue with Unit IV. (Skip numbers 21 and 22.)

21. IF YOU WISH TO END YOU SESSION AT THE COMPUTER:

    Type QUIT and return to the network prompt (N:\>).

22. Remove the network software disk and return it to the LRC information desk.

Assignment:

You will submit a copy of the printed order with observations. Submit this to your instructor by [instructor should insert date].

This assignment will be evaluated on the correctness of the data submitted and will count 10 points.

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Nursing Student's Guide

Unit IV

Unit Title: Graphic Report

Unit Objectives:

Upon completion of this unit, the student will be able to:

1. generate a graphic report on a patient in the HISS.
2. describe how a computer generated graphic report would be useful to nursing staff.

Review:

Remember that the top line of each screen lists acceptable commands. You merely type the first letter of the command you want to start.

The last line of the screen should be watched for informational messages.

You may refer to Unit II again for help in using the system.

Instructions:

IF YOU ARE CONTINUING FROM UNIT III, SKIP TO # 5.

1. To start, turn on a microcomputer with the network software disk.
2. The SAHS network prompt (N:\>) will appear.
3. Type HISS.
4. You will be brought to the HISS area of the network. At this time you can type HELP for assistance, if needed.
5. At the prompt (M:\>) type CHANGE NURSING.
6. Type REPORT GRAPHIC.
7. The program will prompt you:

   ENTER PATIENT'S NUMBER:

8. Enter the patient's admission number obtained in Unit II.

9. Press enter.

10. A report will print which is part of your assignment.

11. When you have finished, type E to exit and return to the HISS prompt (M:\>).

12. You may continue with Unit V. (Skip numbers 13 and 14.)

13. IF YOU WISH TO END YOUR SESSION AT THE COMPUTER:

    Type QUIT and return to the network prompt (N:\>).

14. Remove the network software disk and return it to the LRC information desk.

Assignment:

1. The printed graphic report is one part of your assignment.

2. Prepare a 1 to 2 page, typed, double-spaced report on how a computer generated graphic report such as the one you just generated would be useful to nursing staff.

Both parts of the assignment are due by [instructor should insert date]. This assignment counts 20 points.

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Nursing Student's Guide

Unit V

Unit Title: Management Report

Unit Objectives:

Upon completion of this unit, the student will be able to:

1. generate a management report showing productivity for a nursing unit.

2. describe how this report would be useful to a manager of a nursing unit.

Review:

Remember that the top line of each screen lists acceptable commands. You merely type the first letter of the command you want to start.

The last line of the screen should be watched for informational messages.

You may refer to Unit II again for help in using the system.

Instructions:

IF YOU ARE CONTINUING FROM UNIT IV, SKIP TO # 5.

1. To start, turn on a microcomputer with the network software disk.

2. The SAHS network prompt (N:\>) will appear.

3. Type HISS.

4. You will be brought to the HISS area of the network. At this time you may type HELP for assistance, if needed.

5. Type REPORT MANAGEMENT.

6. The program will prompt you:

   ENTER BEGINNING DATE OF REPORT:

7. Enter the beginning date given to you by your instructor. (The date will be entered as follows: MM/DD/YY.)

8. It will then prompt you:

   ENTER ENDING DATE FOR REPORT:

9. Enter the ending date given to you by your instructor.

10. A report will print which is part of your assignment.

11. When you have finished, type E to exit and return to the HISS prompt (M:\>).

12. Type QUIT and return to the network prompt (N:\>).

13. Remove the network software disk and return it to the LRC information desk.

Assignment:

1. Submit a copy of the printed report as the first part of your assignment.

2. Prepare a report of one to two pages, typed, double spaced, discussing how this type of report would be helpful to a manager of a nursing unit.

Submit both parts of this assignment to your instructor by [instructor should insert date]. This assignment is worth 20 points.

INSTRUCTOR'S COURSE SYLLABUS

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Nursing Instructor's Manual

Module Title: Health Information System Simulation for Nursing

Module Description:

A series of self-paced instructional units which introduce the health care student to the functions of a computerized patient database through the use of a simulated health information system.

Prerequisite:

Introductory microcomputer applications course or equivalent.

Text:

None

Equipment and Materials Required:

The software for the Hospital Information System Simulation (HISS) was created using Informix-SQL by Informix Software, Inc. (Menlo Park, California). Informix-SQL can be obtained at a substantial discount if used for educational purposes.

Informix runs on a variety of systems, but for microcomputers, the standard set-up is an IBM or compatible microcomputer with DOS 3.0 (or higher) and two floppy disk drives (but it is recommended to use a hard disk).

All of the developed software for HISS is released to the public domain and can be obtained from The School of Allied Health Sciences, The University of Texas Medical Branch, Galveston, Texas, 77550, from the Office of Curricular Affairs (409-761-3020). This office will provide the HISS software at a nominal fee to cover distribution costs.

Similarly, the software used to provide the interface for the network is released to the public domain. These programs are mainly DOS batch files and can be easily adapted to a specific network, multi-user system, or even a single-user hard disk system, provided that the system uses DOS.

Contents of the Module:

Unit I -- Introduction to Health Information Systems
Unit II -- Reviewing Patient's Orders
Unit III -- Observation Reporting
Unit IV -- Graphic Report
Unit V -- Management Report

Procedure:

1. Syllabus

Review the syllabus and determine what percentage of the course grade will come from this module. Units II, III, IV, and V will be done in the Learning Resource Center at the School of Allied Health Sciences Building on the campus of The University of Texas Medical Branch. It is estimated that each of these units will require no more than two hours each to complete, and will probably require no more than an hour for each student.

Dates for these laboratory sessions will need to be arranged with the Learning Resource Center (LRC) so that students can be advised of the times the computers can be available for them.

You will want to be in contact with the Network Manager in the Office of Curricular Affairs (761-3020) at the School of Allied Health Sciences.

2. Student's Guide

Unit I:

1. Insert due date for assignment.

2. It would be appropriate to assign reading from material to which the student has already been exposed regarding documentation, confidentiality, and computers.

3. This unit should be reviewed in class, discussing the concept of the hospital information system simulation and reiterating the importance of confidentiality and integrity of data.

Unit II:

1. Assign each student an individual patient from those listed in Appendix A. Give the student the name only. The other information is listed for use when grading assignments.

2. Insert due date for the assignment.

Unit III:

1. The student will use the same patient that was assigned for Unit II.

2. You will need to supply vital sign information to the students for reporting. (You may want students to obtain these vital signs themselves from one another.)

3. An example of a printed order with observations is shown in Appendix B.

4. Assign a due date for the assignment.

Unit IV:

1. The student will use the same patient assigned in Unit I.

2. An example of the Graphic Report is shown in Appendix C.

3. Assign a due date for this assignment.

Unit V:

1. It would be appropriate to assign reading from texts used in the nursing curriculum related to staffing and productivity.

2. The students should be supplied with the dates for the management report. These dates should be for the week ending at the time this unit is assigned. For example, if this unit is to be completed by the student for a period beginning on Monday, July 6, 1987, then the dates given to the student would be 6/29/87 - 7/5/87.

3. An example of the Management Report is shown in Appendix D.

4. Assign a due date for the assignment.

Special Instructions:

The data must be reinitialized at the beginning of each semester. To do this, you will have to log on to the network and the HISS application.

1. Get a HISS disk from the LRC, and boot up the computer with this disk.
2. At the N:> prompt, type HISS.
3. At the M:> prompt, type CHANGE NURSING.
4. Type MAINTAIN.
5. This program may run for a while. When finished, type QUIT, and remove the network disk.

APPENDICES

Appendix A

Special Module 1
Patient List

Patient's Name	Patient Number	Admit Number
Raymond Locklin	9201	1212
Joyce Franklin	9202	1211
William B. Burris	9203	1201
John Parrot	9204	1213
Odile Lasell	9205	1222
Kerrie Doguot	9206	1219
JaNelle Frohne	9207	1221
Elmo Jahn	9208	1202
Raymond Hubbell	9209	1209
Gladnie Pinsker	9210	1218
Annetta Ulrich	9211	1215
Ruby West	9212	1233
Leonard Miranda	9213	1230
Sirous Maples	9214	1228
Peter Q. Mayor	9215	1220
Herbert Bowman	9216	1216
William Dundee	9217	1203
Geo H. Mattes	9218	1204
Martin Tyler	9219	1207
Ludwick Ruiz	9220	1205
Willie Lidstone	9221	1206
Peter Czigan	9222	1235
Christophe K. Burch	9223	1231
Verlie Ivory	9224	1229

Appendix B

OBSERVATIONS

Order number [64] VITAL SIGNS
for Admission # 1201

Observations: Date [(Sat.) May. 30, 1987] Time [12.0]

Temperature [37.0]
Pulse [55]
Respiratory Rate [40]
Heart Pressure [120]/[90]

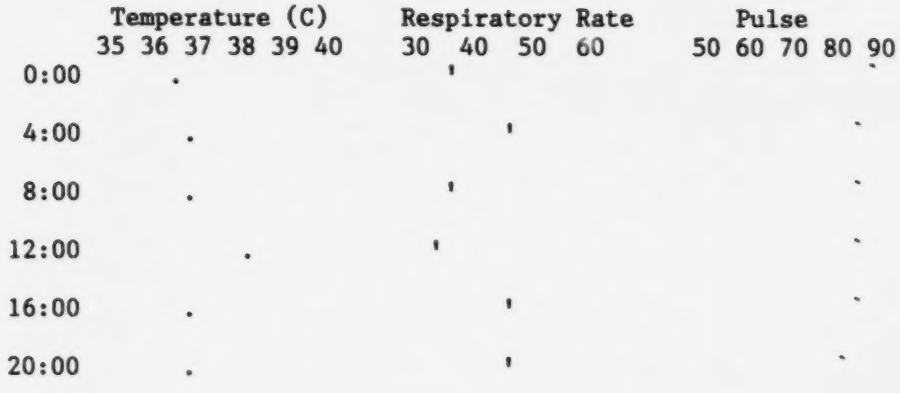
Notes:
[patient sleeping]
[ ]

Appendix C

Graphics Report

For: William B. Burris
Admission #: 1201

Order #64
(Sat) May 30, 1987



Appendix D

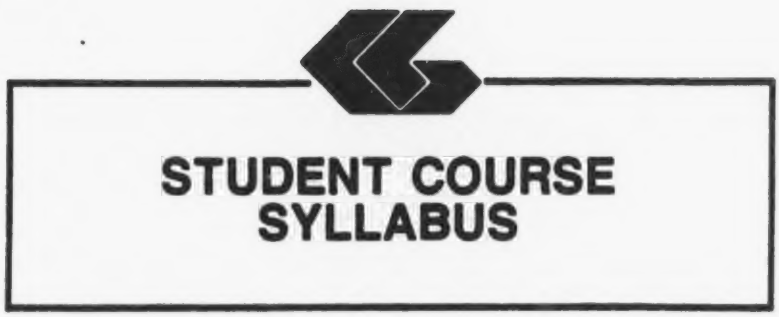
Orders/Results Reporting
Management Report
for the Respiratory Care Department
From 05/01/87 To 06/01/87

Sat, May. 30, 1987

Procedure	Count	Average Time to Complete (hours)
ELECTROCARDIOGRAPH MONIT	1	35.00
Total	1	

Note: Time to Complete is calculated from the reported Time Completed minus the reported time requested

NUCLEAR MEDICINE MODULE



STUDENT COURSE SYLLABUS

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Nuclear Medicine Technology Student's Syllabus

Module Title: Health Information System Simulation for Nuclear Medicine Technology

Module Description:

A series of self-paced instructional units which introduce the health care student to the functions of a computerized patient database through the use of a simulated health information system.

Prerequisites:

Introductory microcomputer applications course or equivalent.

Text:

None

Instructional Process:

This module could be included in an established course in the curriculum of allied health science students. It will be used primarily in the laboratory setting.

Objectives:

Upon completion of this module, the student will be able to:

1. use a simulated hospital information system in a laboratory environment.
2. acquire an understanding of the usefulness of an information system in a clinical setting.
3. contrast the data used in a manual hospital information system with that used in a computerized information system.

Evaluation:

Laboratory assignments: Assignments are a part of each unit in this module [Deadlines and percentage of total course grade should be established by course instructor].

Special Instructions:

The laboratory sessions will be conducted in the Learning Resource Center in the School of Allied Health Sciences building on the UTMB campus. [Instructor will need to determine actual dates and times at the time the course is presented.]

The student will request a network software disk at the counter in the Learning Resource Center (LRC) and ask to be directed to the networked IBM-PCs.

Overview of Module:

Students completing this module (Units I-V) will participate in activities that are simulations of those they would expect to encounter in a real hospital information system. These activities include reviewing orders, reporting activities done as a results of an order, and describing a work pending report and a management report.

Remember:

This is a simulation of a hospital information system and therefore is not as complete as a real-life information system. However, it does simulate a truly integrated data-base system so that there is no redundancy in collecting, storing or reporting data.

STUDENT GUIDE

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Nuclear Medicine Technology Student's Guide

Unit I

Unit Title: Introduction

Unit Objectives:

Upon completion of this unit, the student will be able to:

1. relate the issues of patients' privacy and confidentiality of health information to a hospital information system.

2. discuss data integrity as it relates to a hospital information system.

Discussion:

Local Area Networks (LANs) link micro-computers within a limited geographic area such as a hospital or a university campus. LANs were developed to allow the growing numbers of micro-computers found in organizations to communicate with each other through electronic mail and text transmission, share hardware resources such as printers, and to share information. The computers are connected to each other through coaxial cables in a single line, a star or ring formation, or some modification of this such as the StarLAN network used in this simulation.

The Hospital Information System Simulation (HISS) developed by the School of Allied Health Sciences at The University of Texas Medical Branch at Galveston uses a completely computerized medical record. All orders for patients are received electronically and results are reported electronically. Other health care personnel also provide/receive information throughout the network. This type of information system can use the computer's capabilities to schedule patient treatments and procedures, including routine nursing care. This integration of data also allows management reports to be easily produced. These reports show the activity of a given department/unit for any defined period of time.

This information system is centered around the patient's record because the patient is what health care revolves around. The HISS uses a relational database. This means that records you review or create for a patient are "related" through a patient number to other records about that patient. This allows information to be easily requested from the system. When a common database is used in this way, it means that the information obtained is always up-to-date.

It is important to discuss the reliability or integrity of data. Computers are only tools for handling data. The information that is produced by a system such as this is only as valid as the data entered into the system. The same care must be used in reporting results of observations, therapy or treatments whether a computerized or manual system is used. Information is being reported that affects the future care and treatment of a patient and attention to accuracy is essential.

Whenever data about a patient is being reviewed or reported, the health care provider must consider the privacy of the patient and keep the information confidential. When using manual systems this includes care in handling paper documents. Reports should not be left in places where they can be seen by unauthorized individuals. In a computerized system, caution should be taken in leaving information on the screen where it can be viewed by other individuals. It is also important to guard information about how to enter the system and locate patient information from persons not authorized to view this information.

As a provider of health care, you will often have access to personal, confidential information about patients. It is important that you recognize your role in protecting each patient's privacy.

Assignment:

The assignment for this unit is a short paper to be done after completion of the entire module (Units I-V). This assignment will be due [instructor should insert date]. The body of the paper will be no less than three (3) and no more than five (5) pages in length, typed, double-spaced. A title page and any references cited will also be included. The paper should compare the use of the simulated hospital information system with other types of patient record keeping that you have seen or used. Be sure and give any advantages or disadvantages of the HISS. Include in your discussion comments about confidentiality and integrity of patient data that seemed important to you while completing the assignments for this module. Discuss the usefulness of computer reports, such as those you will be generating, to a department manager.

The paper will be evaluated as follows:

1.	Neatness, format	10 points
2.	Grammar, spelling	10 points
3.	Content	30 points
	TOTAL	50 points

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Nuclear Medicine Technology Student's Guide

Unit II

Unit Title: Reviewing Patients' Orders

Unit Objectives:

Upon completion of this module, the student will be able to:

1. locate a patient in the HISS.
2. review orders on a patient in the HISS.

Entry Screens:

1. All screens to enter or review patient data are done using the Informix Perform Screen Manager. A blank patient form (screen) looks like this:

```
Query Next Previous Add Update Remove Table Screen Current Master Detail
     Output Exit                                  ** 1: patient_data table**

                                   PATIENT INFORMATION

Patient Number      [0           ]
Name:       First          MI  Last
            [           ][ ].[                      ]
Address:
            [                                 ]
            [                       ],[  ][     ]

SS Number           [            ]
Race                [ ]   Sex [ ]  Birthdate [          ]

ADMISSION INFORMATION:

Admission Number    0
Adm Date
Adm Diag
Adm Type                              Source
Attending physician 0
```

2. Common to all screens is the top line, which contains all acceptable commands. This line will look like this:

```
Query Next Previous Add Update Remove Table Screen Current Master Detail
     Output Exit                                  ** 1: patient_data table**
```

3. To start one of these commands, type the first letter of the word. For example, to start a Query of the patient file, type Q.

4. A summary of these screen commands is as follows:

Q(uery)	To query the current patient file to find certain records
N(ext)	To display the Next record (patient file
P(revious)	To display the Previous record (patient) file)
A(dd)	To Add a new record (patient file)
U(pdate)	To Update (change) the current record on the screen
R(emove)	To Remove the current record on the screen
T(ables)	To switch Tables (files)
S(creens)	To switch Screens
C(urrent)	To redisplay the Current record
M(aster)	To switch to the Master table (file)
D(etail)	To switch to the Detail table (file)
O(utput)	To Output the records to a temporary file
E(xit)	To Exit the Screen Manager

Not all of these commands will be used in all screens. The most important commands to remember are Q(uery), A(dd), U(pdate), and E(xit).

5. When the cursor (a blinking underline) is in the top right-hand corner, a command can be selected. Otherwise, it will be on one of the fields of the screen. When it is in a field, the user can do one of the following:

   a. type to put information in the field,
   b. depress Ctrl-C to Quit the command, OR
   c. depress ESC to finish the command.

6. Items a. through c. are displayed at the top of the screen after you have chosen one of the commands. For example, if you have chosen the command A for Add, then you can input information into each field. Depressing the ESC (Escape) key will finish adding the information, and what you have typed will be permanently added to the file.

7. Other standard information on each screen is bracket characters, [], used to delimit each field of the record. The last line of the screen should be watched for informational messages.

Entry Keys:

When in the entry screen, these keys will be useful:

ENTER	-	To go to the next field
Down Arrow	-	Same as enter
Up Arrow	-	To go to the previous field
Left Arrow	-	Moves one character left, without erasing
Right Arrow	-	Moves one character right
Backspace	-	Moves left, deleting the character
DEL	-	Deletes the character at the cursor

Instructions:

1. To start, turn on a microcomputer with the network software disk available from the LRC counter.

2. The SAHS (School of Allied Health Sciences) network prompt (N:\>) will appear.

3. Type HISS.

4. You will be brought to the HISS area of the disk. At this time you can type HELP for assistance, if needed.

5. At the prompt (M:\>) type SCREEN INFO.

6. A blank patient form will appear which looks like this:

```
Query Next Previous Add Update Remove Table Screen Current Master Detail
     Output Exit                                  ** 1: patient_data table**

                                PATIENT INFORMATION

Patient Number      [0           ]
Name:       First          MI  Last
            [           ][ ].[                    ]
Address:
            [                          ]
            [                     ],[  ][     ]

SS Number           [            ]
Race                [ ]   Sex [ ]  Birthdate [          ]

ADMISSION INFORMATION:

Admission Number    0
Adm Date
Adm Diag
Adm Type                              Source
Attending physician 0
```

7. Type Q (for Query). This system allows you to query the patient's file with only partial information about the patient. For example, if you only know the patient's name, you enter that information in the appropriate space and touch ESC. Other information on that patient will appear if that patient is in the system.

8. If the information shown is not for the right patient, you can enter N (for Next) to view the next patient's record or P (for Previous) to view the previous patient's record. If it is the right patient, type D (for Detail). The high light characters, [], will appear around the admission information. If it is not the right admission, you can again use N or P to choose the right admission. <u>When you have located the correct patient and admission, be sure to note the admission number.</u>

9. When you have found the patient's record you need, type D to view the orders on this patient.

10. The most recent orders with results, if appropriate and available, will appear.

11. To see other orders you type N (to display the next order). You may keep typing N if you want to view other orders. You may type P (to display the previous orders) if you want to move backwards through the orders.

12. Complete your assignment for this unit. Remember to keep a record of the order number for use in Unit III.

13. When you have finished reviewing the orders, type E to exit and return to the prompt (M:\>).

14. You may continue with Unit III. (Skip numbers 15 and 16.)

15. IF YOU WANT TO END YOUR SESSION AT THE COMPUTER:

    Type QUIT to leave the HISS. You will see the network prompt (N:/>).

16. Remove the network software disk and return it to the LRC information desk.

Assignment:

Your instructor will give you the name of a patient in the HISS. You will locate this patient in the system by following the instructions given above. The information should be written on notebook paper and given to your instructor by [instructor should insert date]. For the first nuclear medicine order, list:

1. Patient's name
2. Patient's number
3. Admission number
4. Copy of first nuclear medicine order.

This assignment will be evaluated on the correctness of the data submitted to the instructor and is worth 10 points.

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Nuclear Medicine Technology Student's Guide

Unit III

Unit Title: Results/Treatment Reporting

Unit Objectives:

Upon completion of this unit, the student will be able to:

1. receive orders on a patient in the HISS.
2. report on activities done as a result of an order in the HISS.

Review:

Remember that the top line of each screen lists acceptable commands. You merely type the first letter of the command you want to start.

The last line of the screen should be watched for informational messages.

You may refer to Unit II again for help in using the system.

Instructions:

IF YOU ARE CONTINUING FROM UNIT II, SKIP TO # 5.

1. To start, turn on a microcomputer with the network software disk.
2. The SAHS network prompt (N:\>) will appear.
3. Type HISS.
4. You will be brought to the HISS area of the network. At this time you can type HELP for assistance, if needed.
5. At the prompt (M:\>) type CHANGE NUCLEAR MEDICINE. (This will take you to the radiography area of the HISS.)
6. The following information will appear:

   NUCLEAR MEDICINE AREA

7. Type SCREEN RESULTS.

8. A form will appear which looks like this:

```
Query Next Previous Add Update Remove Table Screen Current Master Detail
     Output Exit                                  ** 1: nuclear_results table**

                                RESULTS

Order Number          [0           ]

Results Date [                     ]   Time [      ]

Completed? [Y]

Comments:
    [                                                                    ]
    [                                                                    ]
```

9. Enter A (for Add).

10. Enter the order number you obtained from Unit II.

11. The patient and order information will appear and you should verify that you have the correct patient and the correct order.

12. Enter the date and time and results/treatments. (These will be supplied by your instructor.)

13. Enter any comments.

14. Hit ESC (escape) to finish adding this record.

15. Type O (for output).

16. "Enter output file:" will appear on the screen.

17. Enter PRN (for print) and press Return three (3) times.

18. A report will print which is your assignment.

19. When you are finished, type E (to exit) and return to the network prompt (M:\>).

20. You may continue with Unit IV. (Skip numbers 21 and 22.)

21. IF YOU WISH TO END YOU SESSION AT THE COMPUTER:

    Type QUIT and return to the network prompt (N:\>).

22. Remove the network software disk and return it to the LRC information desk.

Assignment:

You will submit a copy of the printed order with results/treatment. Submit this to your instructor by [instructor should insert date].

This assignment will be evaluated on the correctness of the data submitted and will count 10 points.

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Nuclear Medicine Technology Student's Guide

Unit IV

Unit Title: Pending Report

Unit Objectives:

Upon completion of this unit, the student will be able to:

1. generate a work pending report on a patient in the HISS.
2. describe how a computer generated work pending report would be useful to nuclear medicine staff.

Review:

Remember that the top line of each screen lists acceptable commands. You merely type the first letter of the command you want to start.

The last line of the screen should be watched for informational messages.

You may refer to Unit II again for help in using the system.

Instructions:

IF YOU ARE CONTINUING FROM UNIT III, SKIP TO # 5.

1. To start, turn on a microcomputer with the network software disk.
2. The SAHS network prompt (N:\>) will appear.
3. Type HISS.
4. You will be brought to the HISS area of the network. At this time you can type HELP for assistance, if needed.
5. At the prompt (M:\>) type CHANGE NUCLEAR MEDICINE.
6. Type REPORT PENDING.
7. A report will print which is part of your assignment.

8. When you have finished, type E to exit and return to the HISS prompt (M:\>).

9. You may continue with Unit V. (Skip numbers 10 and 11.)

10. IF YOU WISH TO END YOUR SESSION AT THE COMPUTER:

    Type QUIT and return to the network prompt (N:\>).

11. Remove the network software disk and return it to the LRC information desk.

Assignment:

1. The printed pending report is one part of your assignment.

2. Prepare a 1 to 2 page, typed, double-spaced report on how a computer generated work pending report such as the one you just generated would be useful to nuclear medicine staff.

Both parts of the assignment are due by [instructor should insert date]. This assignment counts 20 points.

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Nuclear Medicine Technology Student's Guide

Unit V

Unit Title: Management Report

Unit Objectives:

Upon completion of this unit, the student will be able to:

1. generate a management report showing productivity for a nuclear medicine unit.

2. describe how this report would be useful to a manager of a nuclear medicine unit.

Review:

Remember that the top line of each screen lists acceptable commands. You merely type the first letter of the command you want to start.

The last line of the screen should be watched for informational messages.

You may refer to Unit II again for help in using the system.

Instructions:

IF YOU ARE CONTINUING FROM UNIT IV, SKIP TO # 5.

1. To start, turn on a microcomputer with the network software disk.

2. The SAHS network prompt (N:\>) will appear.

3. Type HISS.

4. You will be brought to the HISS area of the network. At this time you may type HELP for assistance, if needed.

5. At the prompt (M:\>) type CHANGE NUCLEAR MEDICINE.

6. Type REPORT MANAGEMENT.

7. The program will prompt you:

   ENTER BEGINNING DATE OF REPORT:

8. Enter the beginning date given to you by your instructor. (The date will be entered as follows: MM/DD/YY.)

9. It will then prompt you:

   ENTER ENDING DATE FOR REPORT:

10. Enter the ending date given to you by your instructor.

11. A report will print which is part of your assignment.

12. When you have finished, type E to exit and return to the HISS prompt (M:\>).

13. Type QUIT and return to the network prompt (N:\>).

14. Remove the network software disk and return it to the LRC information desk.

Assignment:

1. Submit a copy of the printed report as the first part of your assignment.

2. Prepare a report of one to two pages, typed, double spaced, discussing how this type of report would be helpful to a manager of a nuclear medicine unit.

Submit both parts of this assignment to your instructor by [instructor should insert date]. This assignment is worth 20 points.

INSTRUCTOR'S COURSE SYLLABUS

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Nuclear Medicine Technology Instructor's Manual

Module Title: Health Information System Simulation for Nuclear Medicine Technology

Module Description:

A series of self-paced instructional units which introduce the health care student to the functions of a computerized patient database through the use of a simulated health information system.

Prerequisite:

Introductory microcomputer applications course or equivalent.

Text:

None

Equipment and Materials Required:

The software for the Hospital Information System Simulation (HISS) was created using Informix-SQL by Informix Software, Inc. (Menlo Park, California). Informix-SQL can be obtained at a substantial discount if used for educational purposes.

Informix runs on a variety of systems, but for microcomputers, the standard set-up is an IBM or compatible microcomputer with DOS 3.0 (or higher) and two floppy disk drives (but it is recommended to use a hard disk).

All of the developed software for HISS is released to the public domain and can be obtained from The School of Allied Health Sciences, The University of Texas Medical Branch, Galveston, Texas, 77550, from the Office of Curricular Affairs (409-761-3020). This office will provide the HISS software at a nominal fee to cover distribution costs.

Similarly, the software used to provide the interface for the network is released to the public domain. These programs are mainly DOS batch files and can be easily adapted to a specific network, multi-user system, or even a single-user hard disk system, provided that the system uses DOS.

Contents of the Module:

Unit I -- Introduction to Health Information Systems
Unit II -- Reviewing Patient's Orders
Unit III -- Results/Treatment Reporting
Unit IV -- Pending Report
Unit V -- Management Report

Procedure:

1. Syllabus

Review the syllabus and determine what percentage of the course grade will come from this module. Units II, III, IV, and V will be done in the Learning Resource Center at the School of Allied Health Sciences Building on the campus of The University of Texas Medical Branch. It is estimated that each of these units will require no more than two hours each to complete, and will probably require no more than an hour for each student.

Dates for these laboratory sessions will need to be arranged with the Learning Resource Center (LRC) so that students can be advised of the times the computers can be available for them.

You will want to be in contact with the Network Manager in the Office of Curricular Affairs (761-3020) at the School of Allied Health Sciences.

2. Student's Guide

Unit I:

1. Insert due date for assignment.

2. It would be appropriate to assign reading from material to which the student has already been exposed regarding documentation, confidentiality, and computers.

3. This unit should be reviewed in class, discussing the concept of the hospital information system simulation and reiterating the importance of confidentiality and integrity of data.

Unit II:

1. Assign each student an individual patient from those listed in Appendix A. Give the student the name only. The other information is listed for use when grading assignments.

2. Insert due date for the assignment.

Unit III:

1. The student will use the same patient that was assigned for Unit II.

2. You will need to supply reporting information to the students. (You may want students to obtain these reports from a clinical experience.)

3. An example of a printed order with observations is shown in Appendix B.

4. Assign a due date for the assignment.

Unit IV:

1. The student will use the same patient assigned in Unit I.

2. An example of the Work Pending Report is shown in Appendix C.

3. Assign a due date for this assignment.

Unit V:

1. It would be appropriate to assign reading from texts used in the nuclear medicine technology curriculum related to staffing and productivity.

2. The students should be supplied with the dates for the management report. These dates should be for the week ending at the time this unit is assigned. For example, if this unit is to be completed by the student for a period beginning on Monday, July 6, 1987, then the dates given to the student would be 6/29/87 - 7/5/87.

3. An example of the Management Report is shown in Appendix D.

4. Assign a due date for the assignment.

Special Instructions:

The data must be reinitialized at the beginning of each semester. To do this, you will have to log on to the network and the HISS application.

1. Get a HISS disk from the LRC, and boot up the computer with this disk.
2. At the N:> prompt, type HISS.
3. At the M:> prompt, type CHANGE NUCLEAR MEDICINE.
4. Type MAINTAIN.
5. This program may run for a while. When finished, type QUIT, and remove the network disk.

APPENDICES

Appendix A

Special Module 1
Patient List

Patient's Name	Patient Number	Admit Number
Raymond Locklin	9201	1212
Joyce Franklin	9202	1211
William B. Burris	9203	1201
John Parrot	9204	1213
Odile Lasell	9205	1222
Kerrie Doguot	9206	1219
JaNelle Frohne	9207	1221
Elmo Jahn	9208	1202
Raymond Hubbell	9209	1209
Gladnie Pinsker	9210	1218
Annetta Ulrich	9211	1215
Ruby West	9212	1233
Leonard Miranda	9213	1230
Sirous Maplës	9214	1228
Peter Q. Mayor	9215	1220
Herbert Bowman	9216	1216
William Dundee	9217	1203
Geo H. Mattes	9218	1204
Martin Tyler	9219	1207
Ludwick Ruiz	9220	1205
Willie Lidstone	9221	1206
Peter Czigan	9222	1235
Christophe K. Burch	9223	1231
Verlie Ivory	9224	1229

Appendix B

TREATMENT / RESULTS REPORTING

			(Order Information)
Order Number	[27]		92.21
			Adm # 1201
Completed Date	[(Sat.) May. 30, 1987]		Pat # 9203
Time	[19.0]	William	Burris
Completed?	[Y]		
Notes	[		]
	[		]

Appendix C

Orders Pending Report
for the Nuclear Medicine Department
as of May. 30, 1987

Admission Number	Order Number	Date Requested	Procedure
1208	34	05/29/87	C-VASC SCAN/ISOTOP FUNCT
1209	35	05/29/87	C-VASC SCAN/ISOTOP FUNCT
1212	37	05/29/87	LIVER SCAN/ISOTOPE FUNCT
1216	38	05/29/87	LIVER SCAN/ISOTOPE FUNCT
1218	39	05/29/87	LIVER SCAN/ISOTOPE FUNCT
1219	40	05/29/87	C-VASC SCAN/ISOTOP FUNCT
1220	41	05/29/87	C-VASC SCAN/ISOTOP FUNCT
1221	42	05/29/87	C-VASC SCAN/ISOTOP FUNCT
1222	43	05/29/87	C-VASC SCAN/ISOTOP FUNCT
1229	45	05/29/87	C-VASC SCAN/ISOTOP FUNCT
1233	44	05/29/87	C-VASC SCAN/ISOTOP FUNCT
1235	47	05/29/87	C-VASC SCAN/ISOTOP FUNCT

Summary Information:

12 Patients, with 12 Pending Orders

Appendix D

Orders/Results Reporting
Management Report
for the Nuclear Medicine Department
From 05/15/87 To 06/15/87

Sun, May. 31, 1987

Procedure	Count	Average Time to Complete (hours)
C-VASC SCAN/ISOTOP FUNCT	1	59.00
Total	1	

Mon, Jun. 01, 1987

Procedure	Count	Average Time to Complete (hours)
LIVER SCAN/ISOTOPE FUNCT	1	83.00
C-VASC SCAN/ISOTOP FUNCT	2	84.50
Total	3	

Note: Time to Complete is calculated from the reported Time Completed minus the reported time requested

RADIOGRAPHIC TECHNOLOGY

STUDENT COURSE SYLLABUS

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Radiographic Technology Student's Syllabus

Module Title: Health Information System Simulation for Radiographic Technology

Module Description:

A series of self-paced instructional units which introduce the health care student to the functions of a computerized patient database through the use of a simulated health information system.

Prerequisites:

Introductory microcomputer applications course or equivalent.

Text:

None

Instructional Process:

This module could be included in an established course in the curriculum of allied health science students. It will be used primarily in the laboratory setting.

Objectives:

Upon completion of this module, the student will be able to:

1. use a simulated hospital information system in a laboratory environment.
2. acquire an understanding of the usefulness of an information system in a clinical setting.
3. contrast the data used in a manual hospital information system with that used in a computerized information system.

Evaluation:

Laboratory assignments: Assignments are a part of each unit in this module [Deadlines and percentage of total course grade should be established by course instructor].

Special Instructions:

The laboratory sessions will be conducted in the Learning Resource Center in the School of Allied Health Sciences building on the UTMB campus. [Instructor will need to determine actual dates and times at the time the course is presented.]

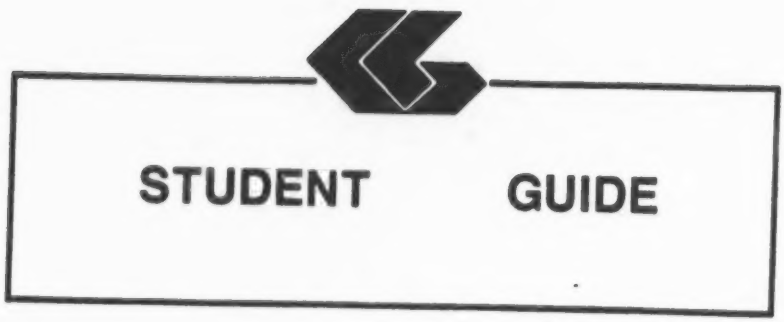
The student will request a network software disk at the counter in the Learning Resource Center (LRC) and ask to be directed to the networked IBM-PCs.

Overview of Module:

Students completing this module (Units I-V) will participate in activities that are simulations of those they would expect to encounter in a real hospital information system. These activities include reviewing orders, reporting activities done as a results of an order, and describing a work pending report and a management report.

Remember:

This is a simulation of a hospital information system and therefore is not as complete as a real-life information system. However, it does simulate a truly integrated data-base system so that there is no redundancy in collecting, storing or reporting data.


STUDENT GUIDE

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Radiographic Technology Student's Guide

Unit I

Unit Title: Introduction

Unit Objectives:

Upon completion of this unit, the student will be able to:

1. relate the issues of patients' privacy and confidentiality of health information to a hospital information system.

2. discuss data integrity as it relates to a hospital information system.

Discussion:

Local Area Networks (LANs) link micro-computers within a limited geographic area such as a hospital or a university campus. LANs were developed to allow the growing numbers of micro-computers found in organizations to communicate with each other through electronic mail and text transmission, share hardware resources such as printers, and to share information. The computers are connected to each other through coaxial cables in a single line, a star or ring formation, or some modification of this such as the StarLAN network used in this simulation.

The Hospital Information System Simulation (HISS) developed by the School of Allied Health Sciences at The University of Texas Medical Branch at Galveston uses a completely computerized medical record. All orders for patients are received electronically and results are reported electronically. Other health care personnel also provide/receive information throughout the network. This type of information system can use the computer's capabilities to schedule patient treatments and procedures, including routine nursing care. This integration of data also allows management reports to be easily produced. These reports show the activity of a given department/unit for any defined period of time.

This information system is centered around the patient's record because the patient is what health care revolves around. The HISS uses a relational database. This means that records you review or create for a patient are "related" through a patient number to other records about that patient. This allows information to be easily requested from the system. When a common database is used in this way, it means that the information obtained is always up-to-date.

It is important to discuss the reliability or integrity of data. Computers are only tools for handling data. The information that is produced by a system such as this is only as valid as the data entered into the system. The same care must be used in reporting results of observations, therapy or treatments whether a computerized or manual system is used. Information is being reported that affects the future care and treatment of a patient and attention to accuracy is essential.

Whenever data about a patient is being reviewed or reported, the health care provider must consider the privacy of the patient and keep the information confidential. When using manual systems this includes care in handling paper documents. Reports should not be left in places where they can be seen by unauthorized individuals. In a computerized system, caution should be taken in leaving information on the screen where it can be viewed by other individuals. It is also important to guard information about how to enter the system and locate patient information from persons not authorized to view this information.

As a provider of health care, you will often have access to personal, confidential information about patients. It is important that you recognize your role in protecting each patient's privacy.

Assignment:

The assignment for this unit is a short paper to be done after completion of the entire module (Units I-V). This assignment will be due [instructor should insert date]. The body of the paper will be no less than three (3) and no more than five (5) pages in length, typed, double-spaced. A title page and any references cited will also be included. The paper should compare the use of the simulated hospital information system with other types of patient record keeping that you have seen or used. Be sure and give any advantages or disadvantages of the HISS. Include in your discussion comments about confidentiality and integrity of patient data that seemed important to you while completing the assignments for this module. Discuss the usefulness of computer reports, such as those you will be generating, to a department manager.

The paper will be evaluated as follows:

1.	Neatness, format	10 points
2.	Grammar, spelling	10 points
3.	Content	30 points
	TOTAL	50 points

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Radiographic Technology Student's Guide

Unit II

Unit Title: Reviewing Patients' Orders

Unit Objectives:

Upon completion of this module, the student will be able to:

1. locate a patient in the HISS.
2. review orders on a patient in the HISS.

Entry Screens:

1. All screens to enter or review patient data are done using the Informix Perform Screen Manager. A blank patient form (screen) looks like this:

```
Query Next Previous Add Update Remove Table Screen Current Master Detail
    Output Exit                                  ** 1: patient_data table**

                                PATIENT INFORMATION

Patient Number      [0          ]
Name:       First          MI  Last
            [           ][ ].[                    ]
Address:
            [                          ]
            [                      ],[  ][      ]

SS Number           [           ]
Race                [ ]   Sex [ ]  Birthdate [          ]

ADMISSION INFORMATION:

Admission Number    0
Adm Date
Adm Diag
Adm Type                          Source
Attending physician 0
```

2. Common to all screens is the top line, which contains all acceptable commands. This line will look like this:

```
Query Next Previous Add Update Remove Table Screen Current Master Detail
    Output Exit                                  ** 1: patient_data table**
```

3. To start one of these commands, type the first letter of the word. For example, to start a Query of the patient file, type Q.

4. A summary of these screen commands is as follows:

Q(uery)	To query the current patient file to find certain records
N(ext)	To display the Next record (patient file
P(revious)	To display the Previous record (patient) file)
A(dd)	To Add a new record (patient file)
U(pdate)	To Update (change) the current record on the screen
R(emove)	To Remove the current record on the screen
T(ables)	To switch Tables (files)
S(creens)	To switch Screens
C(urrent)	To redisplay the Current record
M(aster)	To switch to the Master table (file)
D(etail)	To switch to the Detail table (file)
O(utput)	To Output the records to a temporary file
E(xit)	To Exit the Screen Manager

Not all of these commands will be used in all screens. The most important commands to remember are Q(uery), A(dd), U(pdate), and E(xit).

5. When the cursor (a blinking underline) is in the top right-hand corner, a command can be selected. Otherwise, it will be on one of the fields of the screen. When it is in a field, the user can do one of the following:

a. type to put information in the field,
b. depress Ctrl-C to Quit the command, OR
c. depress ESC to finish the command.

6. Items a. through c. are displayed at the top of the screen after you have chosen one of the commands. For example, if you have chosen the command A for Add, then you can input information into each field. Depressing the ESC (Escape) key will finish adding the information, and what you have typed will be permanently added to the file.

7. Other standard information on each screen is bracket characters, [], used to delimit each field of the record. The last line of the screen should be watched for informational messages.

Entry Keys:

When in the entry screen, these keys will be useful:

ENTER	-	To go to the next field
Down Arrow	-	Same as enter
Up Arrow	-	To go to the previous field
Left Arrow	-	Moves one character left, without erasing
Right Arrow	-	Moves one character right
Backspace	-	Moves left, deleting the character
DEL	-	Deletes the character at the cursor

Instructions:

1. To start, turn on a microcomputer with the network software disk available from the LRC counter.

2. The SAHS (School of Allied Health Sciences) network prompt (N:\>) will appear.

3. Type HISS.

4. You will be brought to the HISS area of the disk. At this time you can type HELP for assistance, if needed.

5. At the prompt (M:\>) type SCREEN INFO.

6. A blank patient form will appear which looks like this:

```
Query Next Previous Add Update Remove Table Screen Current Master Detail
    Output Exit                                   ** 1: patient_data table**

                                PATIENT INFORMATION

Patient Number      [0          ]
Name:       First          MI  Last
            [           ][ ].[                    ]
Address:
            [                          ]
            [                    ],[   ][      ]

SS Number           [           ]
Race                [ ]   Sex [ ]  Birthdate [          ]

ADMISSION INFORMATION:

Admission Number    0
Adm Date
Adm Diag
Adm Type                          Source
Attending physician 0
```

7. Type Q (for Query). This system allows you to query the patient's file with only partial information about the patient. For example, if you only know the patient's name, you enter that information in the appropriate space and touch ESC. Other information on that patient will appear if that patient is in the system.

8. If the information shown is not for the right patient, you can enter N (for Next) to view the next patient's record or P (for Previous) to view the previous patient's record. If it is the right patient, type D (for Detail). The high light characters, [], will appear around the admission information. If it is not the right admission, you can again use N or P to choose the right admission. When you have located the correct patient and admission, be sure to note the admission number.

9. When you have found the patient's record you need, type D to view the orders on this patient.

10. The most recent orders with results, if appropriate and available, will appear.

11. To see other orders you type N (to display the next order). You may keep typing N if you want to view other orders. You may type P (to display the previous orders) if you want to move backwards through the orders.

12. Complete your assignment for this unit. Remember to keep a record of the order number for use in Unit III.

13. When you have finished reviewing the orders, type E to exit and return to the prompt (M:\>).

14. You may continue with Unit III. (Skip numbers 15 and 16.)

15. IF YOU WANT TO END YOUR SESSION AT THE COMPUTER:

    Type QUIT to leave the HISS. You will see the network prompt (N:/>).

16. Remove the network software disk and return it to the LRC information desk.

Assignment:

Your instructor will give you the name of a patient in the HISS. You will locate this patient in the system by following the instructions given above. The information should be written on notebook paper and given to your instructor by [instructor should insert date]. For the first radiographic order, list:

1. Patient's name
2. Patient's number
3. Admission number
4. Copy of first radiographic order.

This assignment will be evaluated on the correctness of the data submitted to the instructor and is worth 10 points.

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Radiographic Technology Student's Guide

Unit III

Unit Title: Results/Treatment Reporting

Unit Objectives:

Upon completion of this unit, the student will be able to:

1. receive orders on a patient in the HISS.
2. report on activities done as a result of an order in the HISS.

Review:

Remember that the top line of each screen lists acceptable commands. You merely type the first letter of the command you want to start.

The last line of the screen should be watched for informational messages.

You may refer to Unit II again for help in using the system.

Instructions:

IF YOU ARE CONTINUING FROM UNIT II, SKIP TO # 5.

1. To start, turn on a microcomputer with the network software disk.
2. The SAHS network prompt (N:\>) will appear.
3. Type HISS.
4. You will be brought to the HISS area of the network. At this time you can type HELP for assistance, if needed.
5. At the prompt (M:\>) type CHANGE RADIOGRAPHY. (This will take you to the radiography area of the HISS.)
6. The following information will appear:

   RADIOGRAPHY AREA

7. Type SCREEN RESULTS.

8. A form will appear which looks like this:

```
Query Next Previous Add Update Remove Table Screen Current Master Detail
    Output Exit                                  ** 1: patient_data table**

                                RESULTS

Order Number          [0          ]

Results Date [                    ]   Time [      ]

Completed? [Y]

Comments:
    [
    [
```

9. Enter A (for Add).

10. Enter the order number you obtained from Unit II.

11. The patient and order information will appear and you should verify that you have the correct patient and the correct order.

12. Enter the date and time and results/treatments. (These will be supplied by your instructor.)

13. Enter any comments.

14. Hit ESC (escape) to finish adding this record.

15. Type O (for output).

16. "Enter output file:" will appear on the screen.

17. Enter PRN (for print) and press Return three (3) times.

18. A report will print which is your assignment.

19. When you are finished, type E (to exit) and return to the network prompt (M:\>).

20. You may continue with Unit IV. (Skip numbers 21 and 22.)

21. IF YOU WISH TO END YOU SESSION AT THE COMPUTER:

    Type QUIT and return to the network prompt (N:\>).

22. Remove the network software disk and return it to the LRC information desk.

Assignment:

You will submit a copy of the printed order with results/treatment. Submit this to your instructor by [instructor should insert date].

This assignment will be evaluated on the correctness of the data submitted and will count 10 points.

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Radiographic Technology Student's Guide

Unit IV

Unit Title: Pending Report

Unit Objectives:

Upon completion of this unit, the student will be able to:

1. generate a work pending report on a patient in the HISS.
2. describe how a computer generated work pending report would be useful to radiography staff.

Review:

Remember that the top line of each screen lists acceptable commands. You merely type the first letter of the command you want to start.

The last line of the screen should be watched for informational messages.

You may refer to Unit II again for help in using the system.

Instructions:

IF YOU ARE CONTINUING FROM UNIT III, SKIP TO # 5.

1. To start, turn on a microcomputer with the network software disk.
2. The SAHS network prompt (N:\>) will appear.
3. Type HISS.
4. You will be brought to the HISS area of the network. At this time you can type HELP for assistance, if needed.
5. At the prompt (M:\>) type CHANGE RADIOGRAHPY.
6. Type REPORT PENDING.
7. A report will print which is part of your assignment.

8. When you have finished, type E to exit and return to the HISS prompt (M:\>).

9. You may continue with Unit V. (Skip numbers 10 and 11.)

10. IF YOU WISH TO END YOUR SESSION AT THE COMPUTER:

    Type QUIT and return to the network prompt (N:\>).

11. Remove the network software disk and return it to the LRC information desk.

Assignment:

1. The printed pending report is one part of your assignment.

2. Prepare a 1 to 2 page, typed, double-spaced report on how a computer generated work pending report such as the one you just generated would be useful to radiography staff.

Both parts of the assignment are due by [instructor should insert date]. This assignment counts 20 points.

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Radiographic Technology Student's Guide

Unit V

Unit Title: Management Report

Unit Objectives:

Upon completion of this unit, the student will be able to:

1. generate a management report showing productivity for a radiography unit.

2. describe how this report would be useful to a manager of a radiography unit.

Review:

Remember that the top line of each screen lists acceptable commands. You merely type the first letter of the command you want to start.

The last line of the screen should be watched for informational messages.

You may refer to Unit II again for help in using the system.

Instructions:

IF YOU ARE CONTINUING FROM UNIT IV, SKIP TO # 5.

1. To start, turn on a microcomputer with the network software disk.

2. The SAHS network prompt (N:\>) will appear.

3. Type HISS.

4. You will be brought to the HISS area of the network. At this time you may type HELP for assistance, if needed.

5. At the prompt (M:\>) type CHANGE RADIOGRAPHY.

6. Type REPORT MANAGEMENT.

7. The program will prompt you:

   ENTER BEGINNING DATE OF REPORT:

8. Enter the beginning date given to you by your instructor. (The date will be entered as follows: MM/DD/YY.)

9. It will then prompt you:

   ENTER ENDING DATE FOR REPORT:

10. Enter the ending date given to you by your instructor.

11. A report will print which is part of your assignment.

12. When you have finished, type E to exit and return to the HISS prompt (M:\>).

13. Type QUIT and return to the network prompt (N:\>).

14. Remove the network software disk and return it to the LRC information desk.

Assignment:

1. Submit a copy of the printed report as the first part of your assignment.

2. Prepare a report of one to two pages, typed, double spaced, discussing how this type of report would be helpful to a manager of a radiography unit.

Submit both parts of this assignment to your instructor by [instructor should insert date]. This assignment is worth 20 points.

INSTRUCTOR'S COURSE SYLLABUS

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Radiographic Technology Instructor's Manual

Module Title: Health Information System Simulation for Radiographic Technology

Module Description:

A series of self-paced instructional units which introduce the health care student to the functions of a computerized patient database through the use of a simulated health information system.

Prerequisite:

Introductory microcomputer applications course or equivalent.

Text:

None

Equipment and Materials Required:

The software for the Hospital Information System Simulation (HISS) was created using Informix-SQL by Informix Software, Inc. (Menlo Park, California). Informix-SQL can be obtained at a substantial discount if used for educational purposes.

Informix runs on a variety of systems, but for microcomputers, the standard set-up is an IBM or compatible microcomputer with DOS 3.0 (or higher) and two floppy disk drives (but it is recommended to use a hard disk).

All of the developed software for HISS is released to the public domain and can be obtained from The School of Allied Health Sciences, The University of Texas Medical Branch, Galveston, Texas, 77550, from the Office of Curricular Affairs (409-761-3020). This office will provide the HISS software at a nominal fee to cover distribution costs.

Similarly, the software used to provide the interface for the network is released to the public domain. These programs are mainly DOS batch files and can be easily adapted to a specific network, multi-user system, or even a single-user hard disk system, provided that the system uses DOS.

Contents of the Module:

Unit I -- Introduction to Health Information Systems
Unit II -- Reviewing Patient's Orders
Unit III -- Results/Treatment Reporting
Unit IV -- Pending Report
Unit V -- Management Report

Procedure:

1. Syllabus

Review the syllabus and determine what percentage of the course grade will come from this module. Units II, III, IV, and V will be done in the Learning Resource Center at the School of Allied Health Sciences Building on the campus of The University of Texas Medical Branch. It is estimated that each of these units will require no more than two hours each to complete, and will probably require no more than an hour for each student.

Dates for these laboratory sessions will need to be arranged with the Learning Resource Center (LRC) so that students can be advised of the times the computers can be available for them.

You will want to be in contact with the Network Manager in the Office of Curricular Affairs (761-3020) at the School of Allied Health Sciences.

2. Student's Guide

Unit I:

1. Insert due date for assignment.

2. It would be appropriate to assign reading from material to which the student has already been exposed regarding documentation, confidentiality, and computers.

3. This unit should be reviewed in class, discussing the concept of the hospital information system simulation and reiterating the importance of confidentiality and integrity of data.

Unit II:

1. Assign each student an individual patient from those listed in Appendix A. Give the student the name only. The other information is listed for use when grading assignments.

2. Insert due date for the assignment.

Unit III:

1. The student will use the same patient that was assigned for Unit II.

2. You will need to supply reporting information to the students. (You may want students to obtain these reports from a clinical experience.)

3. An example of a printed order with observations is shown in Appendix B.

4. Assign a due date for the assignment.

Unit IV:

1. The student will use the same patient assigned in Unit I.

2. An example of the Work Pending Report is shown in Appendix C.

3. Assign a due date for this assignment.

Unit V:

1. It would be appropriate to assign reading from texts used in the radiographic technology curriculum related to staffing and productivity.

2. The students should be supplied with the dates for the management report. These dates should be for the week ending at the time this unit is assigned. For example, if this unit is to be completed by the student for a period beginning on Monday, July 6, 1987, then the dates given to the student would be 6/29/87 - 7/5/87.

3. An example of the Management Report is shown in Appendix D.

4. Assign a due date for the assignment.

Special Instructions:

The data must be reinitialized at the beginning of each semester. To do this, you will have to log on to the network and the HISS application.

1. Get a HISS disk from the LRC, and boot up the computer with this disk.
2. At the N:> prompt, type HISS.
3. At the M:> prompt, type CHANGE RADIOGRAPHY.
4. Type MAINTAIN.
5. This program may run for a while. When finished, type QUIT, and remove the network disk.

APPENDICES

Appendix A

Special Module 1
Patient List

Patient's Name	Patient Number	Admit Number
Raymond Locklin	9201	1212
Joyce Franklin	9202	1211
William B. Burris	9203	1201
John Parrot	9204	1213
Odile Lasell	9205	1222
Kerrie Doguot	9206	1219
JaNelle Frohne	9207	1221
Elmo Jahn	9208	1202
Raymond Hubbell	9209	1209
Gladnie Pinsker	9210	1218
Annetta Ulrich	9211	1215
Ruby West	9212	1233
Leonard Miranda	9213	1230
Sirous Maplës	9214	1228
Peter Q. Mayor	9215	1220
Herbert Bowman	9216	1216
William Dundee	9217	1203
Geo H. Mattes	9218	1204
Martin Tyler	9219	1207
Ludwick Ruiz	9220	1205
Willie Lidstone	9221	1206
Peter Czigan	9222	1235
Christophe K. Burch	9223	1231
Verlie Ivory	9224	1229

Appendix B

TREATMENT / RESULTS REPORTING

			(Order Information)
Order Number	[37]		92.02
			Adm # 1212
Completed Date	[(Fri.) May. 29, 1987]		Pat # 9201
Time	[14.0]	Raymond	Locklin
Completed?	[Y]		
Notes	[		]
	[		]

Appendix C

Orders Pending Report
for the Radiography Department
as of May. 30, 1987

Admission Number	Order Number	Date Requested	Procedure
1201	60	05/29/87	C.A.T. SCAN OF HEAD
1202	61	05/29/87	C.A.T. SCAN OF HEAD
1203	62	05/29/87	C.A.T. SCAN OF HEAD
1204	63	05/29/87	C.A.T. SCAN OF HEAD
1215	59	05/29/87	SKEL XRAY-ANKLE & FOOT
1216	58	05/29/87	SKELETAL SERIES
1218	57	05/29/87	BARIUM SWALLOW
1219	56	05/29/87	BARIUM SWALLOW
1220	55	05/29/87	BARIUM SWALLOW
1222	53	05/29/87	ROUTINE CHEST X-RAY
1228	52	05/29/87	ROUTINE CHEST X-RAY
1229	50	05/29/87	ROUTINE CHEST X-RAY
1230	51	05/29/87	ROUTINE CHEST X-RAY
1231	49	05/29/87	CERVICAL SPINE X-RAY NEC
1233	54	05/29/87	BARIUM SWALLOW
1235	48	05/29/87	CERVICAL SPINE X-RAY NEC

Summary Information:

16 Patients, with 16 Pending Orders

Appendix D

Orders/Results Reporting
Management Report
for the Radiography Department
From 05/01/87 To 06/01/87

Sat, May. 30, 1987

Procedure	Count	Average Time to Complete (hours)
C.A.T. SCAN OF HEAD	1	39.00
Total	1	

Note: Time to Complete is calculated from the reported Time Completed minus the reported time requested

RADIATION THERAPY MODULE

STUDENT COURSE SYLLABUS

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Radiation Therapy Technology Student's Syllabus

Module Title: Health Information System Simulation for Radiation Therapy Technology

Module Description:

A series of self-paced instructional units which introduce the health care student to the functions of a computerized patient database through the use of a simulated health information system.

Prerequisites:

Introductory microcomputer applications course or equivalent.

Text:

None

Instructional Process:

This module could be included in an established course in the curriculum of allied health science students. It will be used primarily in the laboratory setting.

Objectives:

Upon completion of this module, the student will be able to:

1. use a simulated hospital information system in a laboratory environment.
2. acquire an understanding of the usefulness of an information system in a clinical setting.
3. contrast the data used in a manual hospital information system with that used in a computerized information system.

Evaluation:

Laboratory assignments: Assignments are a part of each unit in this module [Deadlines and percentage of total course grade should be established by course instructor].

Special Instructions:

The laboratory sessions will be conducted in the Learning Resource Center in the School of Allied Health Sciences building on the UTMB campus. [Instructor will need to determine actual dates and times at the time the course is presented.]

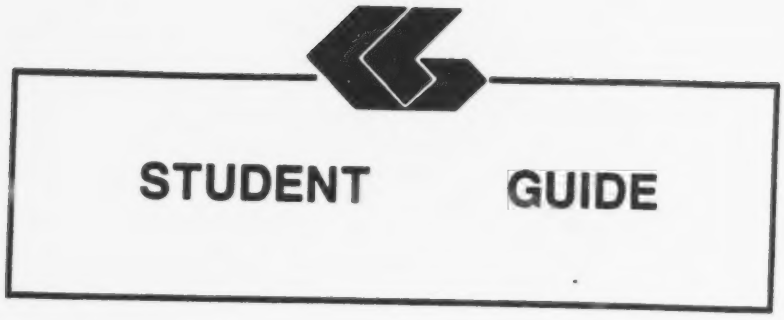
The student will request a network software disk at the counter in the Learning Resource Center (LRC) and ask to be directed to the networked IBM-PCs.

Overview of Module:

Students completing this module (Units I-V) will participate in activities that are simulations of those they would expect to encounter in a real hospital information system. These activities include reviewing orders, reporting activities done as a results of an order, and describing a work pending report and a management report.

Remember:

This is a simulation of a hospital information system and therefore is not as complete as a real-life information system. However, it does simulate a truly integrated data-base system so that there is no redundancy in collecting, storing or reporting data.


STUDENT GUIDE

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Radiation Therapy Technology Student's Guide

Unit I

Unit Title: Introduction

Unit Objectives:

Upon completion of this unit, the student will be able to:

1. relate the issues of patients' privacy and confidentiality of health information to a hospital information system.

2. discuss data integrity as it relates to a hospital information system.

Discussion:

Local Area Networks (LANs) link micro-computers within a limited geographic area such as a hospital or a university campus. LANs were developed to allow the growing numbers of micro-computers found in organizations to communicate with each other through electronic mail and text transmission, share hardware resources such as printers, and to share information. The computers are connected to each other through coaxial cables in a single line, a star or ring formation, or some modification of this such as the StarLAN network used in this simulation.

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This information system is centered around the patient's record because the patient is what health care revolves around. The HISS uses a relational database. This means that records you review or create for a patient are "related" through a patient number to other records about that patient. This allows information to be easily requested from the system. When a common database is used in this way, it means that the information obtained is always up-to-date.

It is important to discuss the reliability or integrity of data. Computers are only tools for handling data. The information that is produced by a system such as this is only as valid as the data entered into the system. The same care must be used in reporting results of observations, therapy or treatments whether a computerized or manual system is used. Information is being reported that affects the future care and treatment of a patient and attention to accuracy is essential.

Whenever data about a patient is being reviewed or reported, the health care provider must consider the privacy of the patient and keep the information confidential. When using manual systems this includes care in handling paper documents. Reports should not be left in places where they can be seen by unauthorized individuals. In a computerized system, caution should be taken in leaving information on the screen where it can be viewed by other individuals. It is also important to guard information about how to enter the system and locate patient information from persons not authorized to view this information.

As a provider of health care, you will often have access to personal, confidential information about patients. It is important that you recognize your role in protecting each patient's privacy.

Assignment:

The assignment for this unit is a short paper to be done after completion of the entire module (Units I-V). This assignment will be due [instructor should insert date]. The body of the paper will be no less than three (3) and no more than five (5) pages in length, typed, double-spaced. A title page and any references cited will also be included. The paper should compare the use of the simulated hospital information system with other types of patient record keeping that you have seen or used. Be sure and give any advantages or disadvantages of the HISS. Include in your discussion comments about confidentiality and integrity of patient data that seemed important to you while completing the assignments for this module. Discuss the usefulness of computer reports, such as those you will be generating, to a department manager.

The paper will be evaluated as follows:

1.	Neatness, format	10 points
2.	Grammar, spelling	10 points
3.	Content	30 points
	TOTAL	50 points

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Radiation Therapy Technology Student's Guide

Unit II

Unit Title: Reviewing Patients' Orders

Unit Objectives:

Upon completion of this module, the student will be able to:

1. locate a patient in the HISS.
2. review orders on a patient in the HISS.

Entry Screens:

1. All screens to enter or review patient data are done using the Informix Perform Screen Manager. A blank patient form (screen) looks like this:

```
Query Next Previous Add Update Remove Table Screen Current Master Detail
    Output Exit                                  ** 1: patient_data table**

                                PATIENT INFORMATION

Patient Number      [0          ]
Name:       First          MI  Last
            [           ][ ].[                    ]
Address:
            [                              ]
            [                        ],[   ][      ]

SS Number           [            ]
Race                [ ]   Sex [ ]  Birthdate [          ]

ADMISSION INFORMATION:

Admission Number    0
Adm Date
Adm Diag
Adm Type                                  Source
Attending physicia. 0
```

2. Common to all screens is the top line, which contains all acceptable commands. This line will look like this:

```
Query Next Previous Add Update Remove Table Screen Current Master Detail
    Output Exit                                    ** 1: patient_data table **
```

3. To start one of these commands, type the first letter of the word. For example, to start a Query of the patient file, type Q.

4. A summary of these screen commands is as follows:

Q(uery)	To query the current patient file to find certain records
N(ext)	To display the Next record (patient file
P(revious)	To display the Previous record (patient) file)
A(dd)	To Add a new record (patient file)
U(pdate)	To Update (change) the current record on the screen
R(emove)	To Remove the current record on the screen
T(ables)	To switch Tables (files)
S(creens)	To switch Screens
C(urrent)	To redisplay the Current record
M(aster)	To switch to the Master table (file)
D(etail)	To switch to the Detail table (file)
O(utput)	To Output the records to a temporary file
E(xit)	To Exit the Screen Manager

Not all of these commands will be used in all screens. The most important commands to remember are Q(uery), A(dd), U(pdate), and E(xit).

5. When the cursor (a blinking underline) is in the top right-hand corner, a command can be selected. Otherwise, it will be on one of the fields of the screen. When it is in a field, the user can do one of the following:

   a. type to put information in the field,
   b. depress Ctrl-C to Quit the command, OR
   c. depress ESC to finish the command.

6. Items a. through c. are displayed at the top of the screen after you have chosen one of the commands. For example, if you have chosen the command A for Add, then you can input information into each field. Depressing the ESC (Escape) key will finish adding the information, and what you have typed will be permanently added to the file.

7. Other standard information on each screen is bracket characters, [], used to delimit each field of the record. The last line of the screen should be watched for informational messages.

Entry Keys:

When in the entry screen, these keys will be useful:

ENTER	-	To go to the next field
Down Arrow	-	Same as enter
Up Arrow	-	To go to the previous field
Left Arrow	-	Moves one character left, without erasing
Right Arrow	-	Moves one character right
Backspace	-	Moves left, deleting the character
DEL	-	Deletes the character at the cursor

Instructions:

1. To start, turn on a microcomputer with the network software disk available from the LRC counter.

2. The SAHS (School of Allied Health Sciences) network prompt (N:\>) will appear.

3. Type HISS.

4. You will be brought to the HISS area of the disk. At this time you can type HELP for assistance, if needed.

5. At the prompt (M:\>) type SCREEN INFO.

6. A blank patient form will appear which looks like this:

```
Query Next Previous Add Update Remove Table Screen Current Master Detail
    Output Exit
                                                  ** 1: patient_data table**

                                PATIENT INFORMATION

Patient Number      [0          ]
Name:       First          MI  Last
            [           ][ ].[                    ]
Address:
            [                          ]
            [                       ],[  ][      ]

SS Number           [            ]
Race                [ ]   Sex [ ]  Birthdate [          ]

ADMISSION INFORMATION:

Admission Number    0
Adm Date
Adm Diag
Adm Type                                Source
Attending physician 0
```

7. Type Q (for Query). This system allows you to query the patient's file with only partial information about the patient. For example, if you only know the patient's name, you enter that information in the appropriate space and touch ESC. Other information on that patient will appear if that patient is in the system.

8. If the information shown is not for the right patient, you can enter N (for Next) to view the next patient's record or P (for Previous) to view the previous patient's record. If it is the right patient, type D (for Detail). The high light characters, [], will appear around the admission information. If it is not the right admission, you can again use N or P to choose the right admission. <u>When you have located the correct patient and admission, be sure to note the admission number.</u>

9. When you have found the patient's record you need, type D to view the orders on this patient.

10. The most recent orders with results, if appropriate and available, will appear.

11. To see other orders you type N (to display the next order). You may keep typing N if you want to view other orders. You may type P (to display the previous orders) if you want to move backwards through the orders.

12. Complete your assignment for this unit. Remember to keep a record of the order number for use in Unit III.

13. When you have finished reviewing the orders, type E to exit and return to the prompt (M:\>).

14. You may continue with Unit III. (Skip numbers 15 and 16.)

15. IF YOU WANT TO END YOUR SESSION AT THE COMPUTER:

    Type QUIT to leave the HISS. You will see the network prompt (N:/>).

16. Remove the network software disk and return it to the LRC information desk.

Assignment:

Your instructor will give you the name of a patient in the HISS. You will locate this patient in the system by following the instructions given above. The information should be written on notebook paper and given to your instructor by [instructor should insert date]. For the first radiation therapy order, list:

1. Patient's name
2. Patient's number
3. Admission number
4. Copy of first radiation therapy order.

This assignment will be evaluated on the correctness of the data submitted to the instructor and is worth 10 points.

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Radiation Therpay Technology Student's Guide

Unit III

Unit Title: Results/Treatment Reporting

Unit Objectives:

Upon completion of this unit, the student will be able to:

1. receive orders on a patient in the HISS.
2. report on activities done as a result of an order in the HISS.

Review:

Remember that the top line of each screen lists acceptable commands. You merely type the first letter of the command you want to start.

The last line of the screen should be watched for informational messages.

You may refer to Unit II again for help in using the system.

Instructions:

IF YOU ARE CONTINUING FROM UNIT II, SKIP TO # 5.

1. To start, turn on a microcomputer with the network software disk.
2. The SAHS network prompt (N:\>) will appear.
3. Type HISS.
4. You will be brought to the HISS area of the network. At this time you can type HELP for assistance, if needed.
5. At the prompt (M:\>) type CHANGE RADIATION THERAPY. (This will take you to the radiography area of the HISS.)
6. The following information will appear:

   RADIATION THERAPY AREA

7. Type SCREEN RESULTS.

8. A form will appear which looks like this:

```
Query Next Previous Add Update Remove Table Screen Current Master Detail
  Output Exit
                                        ** 1: radiation_rslt table **

                              RESULTS

Order Number          [0          ]

Results Date [                    ]   Time [      ]

Completed? [Y]

Comments:
    [                                                              ]
    [                                                              ]
```

9. Enter A (for Add).

10. Enter the order number you obtained from Unit II.

11. The patient and order information will appear and you should verify that you have the correct patient and the correct order.

12. Enter the date and time and results/treatments. (These will be supplied by your instructor.)

13. Enter any comments.

14. Hit ESC (escape) to finish adding this record.

15. Type O (for output).

16. "Enter output file:" will appear on the screen.

17. Enter PRN (for print) and press Return three (3) times.

18. A report will print which is your assignment.

19. When you are finished, type E (to exit) and return to the network prompt (M:\>).

20. You may continue with Unit IV. (Skip numbers 21 and 22.)

21. IF YOU WISH TO END YOU SESSION AT THE COMPUTER:

    Type QUIT and return to the network prompt (N:\>).

22. Remove the network software disk and return it to the LRC information desk.

Assignment:

You will submit a copy of the printed order with results/treatment. Submit this to your instructor by [instructor should insert date].

This assignment will be evaluated on the correctness of the data submitted and will count 10 points.

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Radiation Therapy Technology Student's Guide

Unit IV

Unit Title: Pending Report

Unit Objectives:

Upon completion of this unit, the student will be able to:

1. generate a work pending report on a patient in the HISS.
2. describe how a computer generated work pending report would be useful to radiation therapy staff.

Review:

Remember that the top line of each screen lists acceptable commands. You merely type the first letter of the command you want to start.

The last line of the screen should be watched for informational messages.

You may refer to Unit II again for help in using the system.

Instructions:

IF YOU ARE CONTINUING FROM UNIT III, SKIP TO # 5.

1. To start, turn on a microcomputer with the network software disk.
2. The SAHS network prompt (N:\>) will appear.
3. Type HISS.
4. You will be brought to the HISS area of the network. At this time you can type HELP for assistance, if needed.
5. At the prompt (M:\>) type CHANGE RADIATION THERAPY.
6. Type REPORT PENDING.
7. A report will print which is part of your assignment.

8. When you have finished, type E to exit and return to the HISS prompt (M:\>).

9. You may continue with Unit V. (Skip numbers 10 and 11.)

10. IF YOU WISH TO END YOUR SESSION AT THE COMPUTER:

    Type QUIT and return to the network prompt (N:\>).

11. Remove the network software disk and return it to the LRC information desk.

Assignment:

1. The printed pending report is one part of your assignment.

2. Prepare a 1 to 2 page, typed, double-spaced report on how a computer generated work pending report such as the one you just generated would be useful to radiation therapy staff.

Both parts of the assignment are due by [instructor should insert date]. This assignment counts 20 points.

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Radiation Therapy Technology Student's Guide

Unit V

Unit Title: Management Report

Unit Objectives:

Upon completion of this unit, the student will be able to:

1. generate a management report showing productivity for a radiation therapy unit.
2. describe how this report would be useful to a manager of a radiation therapy unit.

Review:

Remember that the top line of each screen lists acceptable commands. You merely type the first letter of the command you want to start.

The last line of the screen should be watched for informational messages.

You may refer to Unit II again for help in using the system.

Instructions:

IF YOU ARE CONTINUING FROM UNIT IV, SKIP TO # 5.

1. To start, turn on a microcomputer with the network software disk.
2. The SAHS network prompt (N:\>) will appear.
3. Type HISS.
4. You will be brought to the HISS area of the network. At this time you may type HELP for assistance, if needed.
5. At the prompt (M:\>) type CHANGE RADIATION THERAPY.
6. Type REPORT MANAGEMENT.

7. The program will prompt you:

   ENTER BEGINNING DATE OF REPORT:

8. Enter the beginning date given to you by your instructor. (The date will be entered as follows: MM/DD/YY.)

9. It will then prompt you:

   ENTER ENDING DATE FOR REPORT:

10. Enter the ending date given to you by your instructor.

11. A report will print which is part of your assignment.

12. When you have finished, type E to exit and return to the HISS prompt (M:\>).

13. Type QUIT and return to the network prompt (N:\>).

14. Remove the network software disk and return it to the LRC information desk.

Assignment:

1. Submit a copy of the printed report as the first part of your assignment.

2. Prepare a report of one to two pages, typed, double spaced, discussing how this type of report would be helpful to a manager of a radiation therapy unit.

Submit both parts of this assignment to your instructor by [instructor should insert date]. This assignment is worth 20 points.

INSTRUCTOR'S COURSE SYLLABUS

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Radiation Therapy Technology Instructor's Manual

Module Title: Health Information System Simulation for Radiation Therapy Technology

Module Description:

A series of self-paced instructional units which introduce the health care student to the functions of a computerized patient database through the use of a simulated health information system.

Prerequisite:

Introductory microcomputer applications course or equivalent.

Text:

None

Equipment and Materials Required:

The software for the Hospital Information System Simulation (HISS) was created using Informix-SQL by Informix Software, Inc. (Menlo Park, California). Informix-SQL can be obtained at a substantial discount if used for educational purposes.

Informix runs on a variety of systems, but for microcomputers, the standard set-up is an IBM or compatible microcomputer with DOS 3.0 (or higher) and two floppy disk drives (but it is recommended to use a hard disk).

All of the developed software for HISS is released to the public domain and can be obtained from The School of Allied Health Sciences, The University of Texas Medical Branch, Galveston, Texas, 77550, from the Office of Curricular Affairs (409-761-3020). This office will provide the HISS software at a nominal fee to cover distribution costs.

Similarly, the software used to provide the interface for the network is released to the public domain. These programs are mainly DOS batch files and can be easily adapted to a specific network, multi-user system, or even a single-user hard disk system, provided that the system uses DOS.

Contents of the Module:

Unit I -- Introduction to Health Information Systems
Unit II -- Reviewing Patient's Orders
Unit III -- Results/Treatment Reporting
Unit IV -- Pending Report
Unit V -- Management Report

Procedure:

1. Syllabus

Review the syllabus and determine what percentage of the course grade will come from this module. Units II, III, IV, and V will be done in the Learning Resource Center at the School of Allied Health Sciences Building on the campus of The University of Texas Medical Branch. It is estimated that each of these units will require no more than two hours each to complete, and will probably require no more than an hour for each student.

Dates for these laboratory sessions will need to be arranged with the Learning Resource Center (LRC) so that students can be advised of the times the computers can be available for them.

You will want to be in contact with the Network Manager in the Office of Curricular Affairs (761-3020) at the School of Allied Health Sciences.

2. Student's Guide

Unit I:

1. Insert due date for assignment.
2. It would be appropriate to assign reading from material to which the student has already been exposed regarding documentation, confidentiality, and computers.
3. This unit should be reviewed in class, discussing the concept of the hospital information system simulation and reiterating the importance of confidentiality and integrity of data.

Unit II:

1. Assign each student an individual patient from those listed in Appendix A. Give the student the name only. The other information is listed for use when grading assignments.

2. Insert due date for the assignment.

Unit III:

1. The student will use the same patient that was assigned for Unit II.

2. You will need to supply reporting information to the students. (You may want students to obtain these reports from a clinical experience.)

3. An example of a printed order with observations is shown in Appendix B.

4. Assign a due date for the assignment.

Unit IV:

1. The student will use the same patient assigned in Unit I.

2. An example of the Work Pending Report is shown in Appendix C.

3. Assign a due date for this assignment.

Unit V:

1. It would be appropriate to assign reading from texts used in the radiation therapy technology curriculum related to staffing and productivity.

2. The students should be supplied with the dates for the management report. These dates should be for the week ending at the time this unit is assigned. For example, if this unit is to be completed by the student for a period beginning on Monday, July 6, 1987, then the dates given to the student would be 6/29/87 - 7/5/87.

3. An example of the Management Report is shown in Appendix D.

4. Assign a due date for the assignment.

Special Instructions:

The data must be reinitialized at the beginning of each semester. To do this, you will have to log on to the network and the HISS application.

1. Get a HISS disk from the LRC, and boot up the computer with this disk.
2. At the N:> prompt, type HISS.
3. At the M:> prompt, type CHANGE RADIATION THERAPY.
4. Type MAINTAIN.
5. This program may run for a while. When finished, type QUIT, and remove the network disk.

APPENDICES

Appendix A

Special Module 1
Patient List

Patient's Name	Patient Number	Admit Number
Raymond Locklin	9201	1212
Joyce Franklin	9202	1211
William B. Burris	9203	1201
John Parrot	9204	1213
Odile Lasell	9205	1222
Kerrie Doguot	9206	1219
JaNelle Frohne	9207	1221
Elmo Jahn	9208	1202
Raymond Hubbell	9209	1209
Gladnie Pinsker	9210	1218
Annetta Ulrich	9211	1215
Ruby West	9212	1233
Leonard Miranda	9213	1230
Sirous Maplės	9214	1228
Peter Q. Mayor	9215	1220
Herbert Bowman	9216	1216
William Dundee	9217	1203
Geo H. Mattes	9218	1204
Martin Tyler	9219	1207
Ludwick Ruiz	9220	1205
Willie Lidstone	9221	1206
Peter Czigan	9222	1235
Christophe K. Burch	9223	1231
Verlie Ivory	9224	1229

Appendix B

TREATMENT / RESULTS REPORTING

Order Number	[60]		(Order Information) 87.03
Completed Date	[(Sat.) May. 30, 1987]		Adm # 1201
Time	[15.0]	William	Pat # 9203 Burris
Completed?	[Y]		
Notes	[		]
	[		]

Appendix C

Orders Pending Report
for the Radiation Therapy Department
as of May. 30, 1987

Admission Number	Order Number	Date Requested	Procedure
1201	27	05/29/87	CONTACT RADIATION
1202	28	05/29/87	CONTACT RADIATION
1203	29	05/29/87	CONTACT RADIATION
1204	30	05/29/87	CONTACT RADIATION
1205	31	05/29/87	CONTACT RADIATION
1206	80	05/30/87	INJECT OF RADIOISOTO
1207	81	05/30/87	INJECT OF RADIOISOTO
1218	77	05/30/87	TELERADIOTH/1-25 MEV PRO
1220	76	05/30/87	TELERADIOTH/1-25 MEV PRO
1220	79	05/30/87	INJECT OF RADIOISOTO
1228	78	05/30/87	TELERADIOTH/1-25 MEV PRO
1231	75	05/30/87	TELERADIOTH/1-25 MEV PRO

Summary Information:

11 Patients, with 12 Pending Orders

Appendix D

Orders/Results Reporting
Management Report
for the Radiation Therapy Department
From 05/01/87 To 06/01/87

Sat, May. 30, 1987

Procedure	Count	Average Time to Complete (hours)
CONTACT RADIATION	1	43.00
Total	1	

Note: Time to Complete is calculated from the reported Time Completed minus the reported time requested

RESPIRATORY CARE MODULE

STUDENT COURSE SYLLABUS

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Respiratory Care Technology Student's Syllabus

Module Title: Health Information System Simulation for Respiratory Care Technology

Module Description:

A series of self-paced instructional units which introduce the health care student to the functions of a computerized patient database through the use of a simulated health information system.

Prerequisites:

Introductory microcomputer applications course or equivalent.

Text:

None

Instructional Process:

This module could be included in an established course in the curriculum of allied health science students. It will be used primarily in the laboratory setting.

Objectives:

Upon completion of this module, the student will be able to:

1. use a simulated hospital information system in a laboratory environment.
2. acquire an understanding of the usefulness of an information system in a clinical setting.
3. contrast the data used in a manual hospital information system with that used in a computerized information system.

Evaluation:

Laboratory assignments: Assignments are a part of each unit in this module [Deadlines and percentage of total course grade should be established by course instructor].

Special Instructions:

The laboratory sessions will be conducted in the Learning Resource Center in the School of Allied Health Sciences building on the UTMB campus. [Instructor will need to determine actual dates and times at the time the course is presented.]

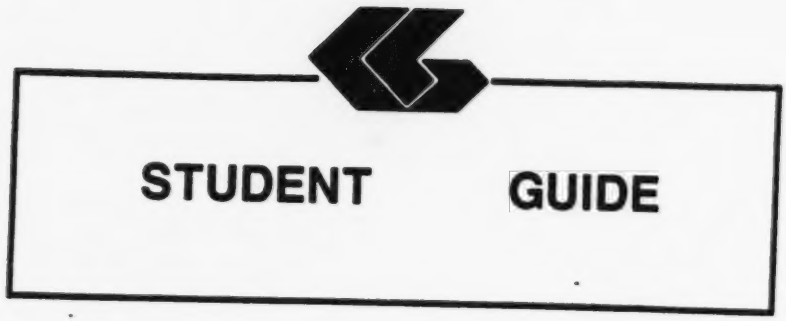
The student will request a network software disk at the counter in the Learning Resource Center (LRC) and ask to be directed to the networked IBM-PCs.

Overview of Module:

Students completing this module (Units I-V) will participate in activities that are simulations of those they would expect to encounter in a real hospital information system. These activities include reviewing orders, reporting activities done as a results of an order, and describing a work pending report and a management report.

Remember:

This is a simulation of a hospital information system and therefore is not as complete as a real-life information system. However, it does simulate a truly integrated data-base system so that there is no redundancy in collecting, storing or reporting data.


STUDENT GUIDE

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Respiratory Care Technology Student's Guide

Unit I

Unit Title: Introduction

Unit Objectives:

Upon completion of this unit, the student will be able to:

1. relate the issues of patients' privacy and confidentiality of health information to a hospital information system.

2. discuss data integrity as it relates to a hospital information system.

Discussion:

Local Area Networks (LANs) link micro-computers within a limited geographic area such as a hospital or a university campus. LANs were developed to allow the growing numbers of micro-computers found in organizations to communicate with each other through electronic mail and text transmission, share hardware resources such as printers, and to share information. The computers are connected to each other through coaxial cables in a single line, a star or ring formation, or some modification of this such as the StarLAN network used in this simulation.

The Hospital Information System Simulation (HISS) developed by the School of Allied Health Sciences at The University of Texas Medical Branch at Galveston uses a completely computerized medical record. All orders for patients are received electronically and results are reported electronically. Other health care personnel also provide/receive information throughout the network. This type of information system can use the computer's capabilities to schedule patient treatments and procedures, including routine nursing care. This integration of data also allows management reports to be easily produced. These reports show the activity of a given department/unit for any defined period of time.

This information system is centered around the patient's record because the patient is what health care revolves around. The HISS uses a relational database. This means that records you review or create for a patient are "related" through a patient number to other records about that patient. This allows information to be easily requested from the system. When a common database is used in this way, it means that the information obtained is always up-to-date.

It is important to discuss the reliability or integrity of data. Computers are only tools for handling data. The information that is produced by a system such as this is only as valid as the data entered into the system. The same care must be used in reporting results of observations, therapy or treatments whether a computerized or manual system is used. Information is being reported that affects the future care and treatment of a patient and attention to accuracy is essential.

Whenever data about a patient is being reviewed or reported, the health care provider must consider the privacy of the patient and keep the information confidential. When using manual systems this includes care in handling paper documents. Reports should not be left in places where they can be seen by unauthorized individuals. In a computerized system, caution should be taken in leaving information on the screen where it can be viewed by other individuals. It is also important to guard information about how to enter the system and locate patient information from persons not authorized to view this information.

As a provider of health care, you will often have access to personal, confidential information about patients. It is important that you recognize your role in protecting each patient's privacy.

Assignment:

The assignment for this unit is a short paper to be done after completion of the entire module (Units I-V). This assignment will be due [instructor should insert date]. The body of the paper will be no less than three (3) and no more than five (5) pages in length, typed, double-spaced. A title page and any references cited will also be included. The paper should compare the use of the simulated hospital information system with other types of patient record keeping that you have seen or used. Be sure and give any advantages or disadvantages of the HISS. Include in your discussion comments about confidentiality and integrity of patient data that seemed important to you while completing the assignments for this module. Discuss the usefulness of computer reports, such as those you will be generating, to a department manager.

The paper will be evaluated as follows:

1.	Neatness, format	10 points
2.	Grammar, spelling	10 points
3.	Content	30 points
	TOTAL	50 points

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Respiratory Care Technology Student's Guide

Unit II

Unit Title: Reviewing Patients' Orders

Unit Objectives:

Upon completion of this module, the student will be able to:

1. locate a patient in the HISS.
2. review orders on a patient in the HISS.

Entry Screens:

1. All screens to enter or review patient data are done using the Informix Perform Screen Manager. A blank patient form (screen) looks like this:

```
Query Next Previous Add Update Remove Table Screen Current Master Detail
    Output Exit                                  ** 1: patient_data table**

                                PATIENT INFORMATION

Patient Number      [0          ]
Name:       First          MI  Last
            [           ][ ].[                    ]
Address:
            [                          ]
            [                       ],[  ][      ]

SS Number           [           ]
Race                [ ]   Sex [ ]  Birthdate [          ]

ADMISSION INFORMATION:

Admission Number    0
Adm Date
Adm Diag
Adm Type                                Source
Attending physician 0
```

2. Common to all screens is the top line, which contains all acceptable commands. This line will look like this:

```
Query Next Previous Add Update Remove Table Screen Current Master Detail
   Output Exit
                                                    ** 1: patient_data table**
```

3. To start one of these commands, type the first letter of the word. For example, to start a Query of the patient file, type Q.

4. A summary of these screen commands is as follows:

Q(uery)	To query the current patient file to find certain records
N(ext)	To display the Next record (patient file
P(revious)	To display the Previous record (patient) file)
A(dd)	To Add a new record (patient file)
U(pdate)	To Update (change) the current record on the screen
R(emove)	To Remove the current record on the screen
T(ables)	To switch Tables (files)
S(creens)	To switch Screens
C(urrent)	To redisplay the Current record
M(aster)	To switch to the Master table (file)
D(etail)	To switch to the Detail table (file)
O(utput)	To Output the records to a temporary file
E(xit)	To Exit the Screen Manager

Not all of these commands will be used in all screens. The most important commands to remember are Q(uery), A(dd), U(pdate), and E(xit).

5. When the cursor (a blinking underline) is in the top right-hand corner, a command can be selected. Otherwise, it will be on one of the fields of the screen. When it is in a field, the user can do one of the following:

a. type to put information in the field,
b. depress Ctrl-C to Quit the command, OR
c. depress ESC to finish the command.

6. Items a. through c. are displayed at the top of the screen after you have chosen one of the commands. For example, if you have chosen the command A for Add, then you can input information into each field. Depressing the ESC (Escape) key will finish adding the information, and what you have typed will be permanently added to the file.

7. Other standard information on each screen is bracket characters, [], used to delimit each field of the record. The last line of the screen should be watched for informational messages.

Entry Keys:

When in the entry screen, these keys will be useful:

ENTER	-	To go to the next field
Down Arrow	-	Same as enter
Up Arrow	-	To go to the previous field
Left Arrow	-	Moves one character left, without erasing
Right Arrow	-	Moves one character right
Backspace	-	Moves left, deleting the character
DEL	-	Deletes the character at the cursor

Instructions:

1. To start, turn on a microcomputer with the network software disk available from the LRC counter.

2. The SAHS (School of Allied Health Sciences) network prompt (N:\>) will appear.

3. Type HISS.

4. You will be brought to the HISS area of the disk. At this time you can type HELP for assistance, if needed.

5. At the prompt (M:\>) type SCREEN INFO.

6. A blank patient form will appear which looks like this:

```
Query Next Previous Add Update Remove Table Screen Current Master Detail
    Output Exit                                  ** 1: patient_data table**

                                PATIENT INFORMATION

Patient Number      [0          ]
Name:       First          MI  Last
            [           ][ ].[                    ]
Address:
            [                          ]
            [                    ],[   ][      ]

SS Number           [           ]
Race                [ ]   Sex [ ]  Birthdate [          ]

ADMISSION INFORMATION:

Admission Number    0
Adm Date
Adm Diag
Adm Type                              Source
Attending physician 0
```

7. Type Q (for Query). This system allows you to query the patient's file with only partial information about the patient. For example, if you only know the patient's name, you enter that information in the appropriate space and touch ESC. Other information on that patient will appear if that patient is in the system.

8. If the information shown is not for the right patient, you can enter N (for Next) to view the next patient's record or P (for Previous) to view the previous patient's record. If it is the right patient, type D (for Detail). The high light characters, [], will appear around the admission information. If it is not the right admission, you can again use N or P to choose the right admission. <u>When you have located the correct patient and admission, be sure to note the admission number.</u>

9. When you have found the patient's record you need, type D to view the orders on this patient.

10. The most recent orders with results, if appropriate and available, will appear.

11. To see other orders you type N (to display the next order). You may keep typing N if you want to view other orders. You may type P (to display the previous orders) if you want to move backwards through the orders.

12. Complete your assignment for this unit. Remember to keep a record of the order number for use in Unit III.

13. When you have finished reviewing the orders, type E to exit and return to the prompt (M:\>).

14. You may continue with Unit III. (Skip numbers 15 and 16.)

15. IF YOU WANT TO END YOUR SESSION AT THE COMPUTER:

    Type QUIT to leave the HISS. You will see the network prompt (N:/>).

16. Remove the network software disk and return it to the LRC information desk.

Assignment:

Your instructor will give you the name of a patient in the HISS. You will locate this patient in the system by following the instructions given above. The information should be written on notebook paper and given to your instructor by [instructor should insert date]. For the first respiratory care order, list:

1. Patient's name
2. Patient's number
3. Admission number
4. Copy of first respiratory care order.

This assignment will be evaluated on the correctness of the data submitted to the instructor and is worth 10 points.

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Respiratory Care Technology Student's Guide

Unit III

Unit Title: Results/Treatment Reporting

Unit Objectives:

Upon completion of this unit, the student will be able to:

1. receive orders on a patient in the HISS.
2. report on activities done as a result of an order in the HISS.

Review:

Remember that the top line of each screen lists acceptable commands. You merely type the first letter of the command you want to start.

The last line of the screen should be watched for informational messages.

You may refer to Unit II again for help in using the system.

Instructions:

IF YOU ARE CONTINUING FROM UNIT II, SKIP TO # 5.

1. To start, turn on a microcomputer with the network software disk.
2. The SAHS network prompt (N:\>) will appear.
3. Type HISS.
4. You will be brought to the HISS area of the network. At this time you can type HELP for assistance, if needed.
5. At the prompt (M:\>) type CHANGE RESPIRATORY CARE. (This will take you to the radiography area of the HISS.)
6. The following information will appear:

   RESPIRATORY CARE AREA

7. Type SCREEN RESULTS.

8. A form will appear which looks like this:

```
Query Next Previous Add Update Remove Table Screen Current Master Detail
    Output Exit                                  ** 1: respirat_reslt table**

                                RESULTS

Order Number          [0          ]

Results Date [                    ]   Time [      ]

Completed? [Y]

Comments:
    [                                                                    ]
    [                                                                    ]
```

9. Enter A (for Add).

10. Enter the order number you obtained from Unit II.

11. The patient and order information will appear and you should verify that you have the correct patient and the correct order.

12. Enter the date and time and results/treatments. (These will be supplied by your instructor.)

13. Enter any comments.

14. Hit ESC (escape) to finish adding this record.

15. Type O (for output).

16. "Enter output file:" will appear on the screen.

17. Enter PRN (for print) and press Return three (3) times.

18. A report will print which is your assignment.

19. When you are finished, type E (to exit) and return to the network prompt (M:\>).

20. You may continue with Unit IV. (Skip numbers 21 and 22.)

21. IF YOU WISH TO END YOU SESSION AT THE COMPUTER:

    Type QUIT and return to the network prompt (N:\>).

22. Remove the network software disk and return it to the LRC information desk.

Assignment:

You will submit a copy of the printed order with results/treatment. Submit this to your instructor by [instructor should insert date].

This assignment will be evaluated on the correctness of the data submitted and will count 10 points.

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Respiratory Care Technology Student's Guide

Unit IV

Unit Title: Pending Report

Unit Objectives:

Upon completion of this unit, the student will be able to:

1. generate a work pending report on a patient in the HISS.
2. describe how a computer generated work pending report would be useful to respiratory care staff.

Review:

Remember that the top line of each screen lists acceptable commands. You merely type the first letter of the command you want to start.

The last line of the screen should be watched for informational messages.

You may refer to Unit II again for help in using the system.

Instructions:

IF YOU ARE CONTINUING FROM UNIT III, SKIP TO # 5.

1. To start, turn on a microcomputer with the network software disk.
2. The SAHS network prompt (N:\>) will appear.
3. Type HISS.
4. You will be brought to the HISS area of the disk. At this time you can type HELP for assistance.
5. At the prompt (M:\>) type CHANGE RESPIRATORY CARE.
6. Type REPORT PENDING.
7. A report will print which is part of your assignment.

8. When you have finished, type E to exit and return to the HISS prompt (M:\>).

9. You may continue with Unit V. (Skip numbers 10 and 11.)

10. IF YOU WISH TO END YOUR SESSION AT THE COMPUTER:

    Type QUIT and return to the network prompt (N:\>).

11. Remove the network software disk and return it to the LRC information desk.

Assignment:

1. The printed pending report is one part of your assignment.

2. Prepare a 1 to 2 page, typed, double-spaced report on how a computer generated work pending report such as the one you just generated would be useful to respiratory care staff.

Both parts of the assignment are due by [instructor should insert date]. This assignment counts 20 points.

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Respiratory Care Technology Student's Guide

Unit V

Unit Title: Management Report

Unit Objectives:

Upon completion of this unit, the student will be able to:

1. generate a management report showing productivity for a respiratory care unit.
2. describe how this report would be useful to a manager of a respiratory care unit.

Review:

Remember that the top line of each screen lists acceptable commands. You merely type the first letter of the command you want to start.

The last line of the screen should be watched for informational messages.

You may refer to Unit II again for help in using the system.

Instructions:

IF YOU ARE CONTINUING FROM UNIT IV, SKIP TO # 5.

1. To start, turn on a microcomputer with the network software disk.
2. The SAHS network prompt (N:\>) will appear.
3. Type HISS.
4. You will be brought to the HISS area of the network. At this time you may type HELP for assistance, if needed.
5. At the prompt (M:\>) type CHANGE RESPIRATORY CARE.
6. Type REPORT MANAGEMENT.

7. The program will prompt you:

   ENTER BEGINNING DATE OF REPORT:

8. Enter the beginning date given to you by your instructor. (The date will be entered as follows: MM/DD/YY.)

9. It will then prompt you:

   ENTER ENDING DATE FOR REPORT:

10. Enter the ending date given to you by your instructor.

11. A report will print which is part of your assignment.

12. When you have finished, type E to exit and return to the HISS prompt (M:\>).

13. Type QUIT and return to the network prompt (N:\>).

14. Remove the network software disk and return it to the LRC information desk.

Assignment:

1. Submit a copy of the printed report as the first part of your assignment.

2. Prepare a report of one to two pages, typed, double spaced, discussing how this type of report would be helpful to a manager of a respiratory care unit.

Submit both parts of this assignment to your instructor by [instructor should insert date]. This assignment is worth 20 points.

INSTRUCTOR'S COURSE SYLLABUS

HOSPITAL INFORMATION SYSTEM SIMULATION MODULE

Respiratory Care Technology Instructor's Manual

Module Title: Health Information System Simulation for Respiratory Care Technology

Module Description:

A series of self-paced instructional units which introduce the health care student to the functions of a computerized patient database through the use of a simulated health information system.

Prerequisite:

Introductory microcomputer applications course or equivalent.

Text:

None

Equipment and Materials Required:

The software for the Hospital Information System Simulation (HISS) was created using Informix-SQL by Informix Software, Inc. (Menlo Park, California). Informix-SQL can be obtained at a substantial discount if used for educational purposes.

Informix runs on a variety of systems, but for microcomputers, the standard set-up is an IBM or compatible microcomputer with DOS 3.0 (or higher) and two floppy disk drives (but it is recommended to use a hard disk).

All of the developed software for HISS is released to the public domain and can be obtained from The School of Allied Health Sciences, The University of Texas Medical Branch, Galveston, Texas, 77550, from the Office of Curricular Affairs (409-761-3020). This office will provide the HISS software at a nominal fee to cover distribution costs.

Similarly, the software used to provide the interface for the network is released to the public domain. These programs are mainly DOS batch files and can be easily adapted to a specific network, multi-user system, or even a single-user hard disk system, provided that the system uses DOS.

Contents of the Module:

Unit I -- Introduction to Health Information Systems
Unit II -- Reviewing Patient's Orders
Unit III -- Results/Treatment Reporting
Unit IV -- Pending Report
Unit V -- Management Report

Procedure:

1. Syllabus

Review the syllabus and determine what percentage of the course grade will come from this module. Units II, III, IV, and V will be done in the Learning Resource Center at the School of Allied Health Sciences Building on the campus of The University of Texas Medical Branch. It is estimated that each of these units will require no more than two hours each to complete, and will probably require no more than an hour for each student.

Dates for these laboratory sessions will need to be arranged with the Learning Resource Center (LRC) so that students can be advised of the times the computers can be available for them.

You will want to be in contact with the Network Manager in the Office of Curricular Affairs (761-3020) at the School of Allied Health Sciences.

2. Student's Guide

Unit I:

1. Insert due date for assignment.

2. It would be appropriate to assign reading from material to which the student has already been exposed regarding documentation, confidentiality, and computers.

3. This unit should be reviewed in class, discussing the concept of the hospital information system simulation and reiterating the importance of confidentiality and integrity of data.

Unit II:

1. Assign each student an individual patient from those listed in Appendix A. Give the student the name only. The other information is listed for use when grading assignments.

2. Insert due date for the assignment.

Unit III:

1. The student will use the same patient that was assigned for Unit II.

2. You will need to supply reporting information to the students. (You may want students to obtain these reports from a clinical experience.)

3. An example of a printed order with observations is shown in Appendix B.

4. Assign a due date for the assignment.

Unit IV:

1. The student will use the same patient assigned in Unit I.

2. An example of the Work Pending Report is shown in Appendix C.

3. Assign a due date for this assignment.

Unit V:

1. It would be appropriate to assign reading from texts used in the respiratory care technology curriculum related to staffing and productivity.

2. The students should be supplied with the dates for the management report. These dates should be for the week ending at the time this unit is assigned. For example, if this unit is to be completed by the student for a period beginning on Monday, July 6, 1987, then the dates given to the student would be 6/29/87 - 7/5/87.

3. An example of the Management Report is shown in Appendix D.

4. Assign a due date for the assignment.

Special Instructions:

The data must be reinitialized at the beginning of each semester. To do this, you will have to log on to the network and the HISS application.

1. Get a HISS disk from the LRC, and boot up the computer with this disk.
2. At the N:> prompt, type HISS.
3. At the M:> prompt, type CHANGE RESPIRATORY CARE.
4. Type MAINTAIN.
5. This program may run for a while. When finished, type QUIT, and remove the network disk.

APPENDICES

Appendix A

Special Module 1
Patient List

Patient's Name	Patient Number	Admit Number
Raymond Locklin	9201	1212
Joyce Franklin	9202	1211
William B. Burris	9203	1201
John Parrot	9204	1213
Odile Lasell	9205	1222
Kerrie Doguot	9206	1219
JaNelle Frohne	9207	1221
Elmo Jahn	9208	1202
Raymond Hubbell	9209	1209
Gladnie Pinsker	9210	1218
Annetta Ulrich	9211	1215
Ruby West	9212	1233
Leonard Miranda	9213	1230
Sirous Maplës	9214	1228
Peter Q. Mayor	9215	1220
Herbert Bowman	9216	1216
William Dundee	9217	1203
Geo H. Mattes	9218	1204
Martin Tyler	9219	1207
Ludwick Ruiz	9220	1205
Willie Lidstone	9221	1206
Peter Czigan	9222	1235
Christophe K. Burch	9223	1231
Verlie Ivory	9224	1229

Appendix B

TREATMENT / RESULTS REPORTING

Order Number	[16]		(Order Information) 89.54
Completed Date	[(Sat.) May. 30, 1987]		Adm # 1212
Time	[11.0]	Raymond	Pat # 9201 Locklin
Completed?	[Y]		
Notes	[		]
	[		]

Appendix C

Orders Pending Report
for the Respiratory Care Department
as of May. 30, 1987

Admission Number	Order Number	Date Requested	Procedure
1201	5	05/29/87	ELECTROCARDIOGRAM
1204	18	05/29/87	ELECTROCARDIOGRAPH MONIT
1209	25	05/29/87	ELECTROCARDIOGRAM
1211	11	05/29/87	IPPB
1212	16	05/29/87	ELECTROCARDIOGRAPH MONIT
1213	8	05/29/87	ELECTROCARDIOGRAM
1213	14	05/29/87	OXYGEN ENRICHMENT NEC
1215	19	05/29/87	ELECTROCARDIOGRAPH MONIT
1216	26	05/29/87	ELECTROCARDIOGRAM
1218	12	05/29/87	IPPB
1219	15	05/29/87	OXYGEN ENRICHMENT NEC
1221	24	05/29/87	ELECTROCARDIOGRAM
1229	10	05/29/87	IPPB
1230	6	05/29/87	ELECTROCARDIOGRAM
1231	17	05/29/87	ELECTROCARDIOGRAPH MONIT
1234	4	05/29/87	ELECTROCARDIOGRAM
1235	7	05/29/87	ELECTROCARDIOGRAM
9200	3	05/29/87	ELECTROCARDIOGRAM

Summary Information:

17 Patients, with 18 Pending Orders

Appendix D

Management Report for Nursing Department
from May. 01, 1987
to Jun. 01, 1987

19 Patients handled, with 173 Observations Performed